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Bulletin

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ANEMIA OF PREGNANCY*

CHARLES EDWIN GALLOWAY, M.D.

EVANSTON, ILL.

The majority of women, when pregnant, develop anemia. The endeavor should be made, therefore, to include examination of the blood in the routine care of pregnant women. Some of this anemia may be due to dilution, but so far there has been little scientific or clinical evidence to substantiate this theory. On the other hand there is some published evidence to show that it is a true anemia due to the destruction of the erythrocytes in the placenta.

The examinations made in the majority of the large maternity clinics do not include many hemoglobin estimations or red cell counts. The subject of toxemia stands out as of primary importance, and at some visits it is the sole observation made. The same is true of private practice. Most of the questions asked and the examinations made are relative to elimination and the possible development of toxemia. Routine observations should include many others, such as foci of infection, weight, condition of the heart and the thyroid, and also the hemoglobin estimation and the red cell count. If severe anemia develops and proper treatment will help to combat it, the patient deserves the benefit of such treatment.

After reviewing the literature on so-called pernicious anemia of pregnancy, one is easily convinced that in practically all the cases reported so far no prenatal care was given. Routine examinations of the blood will probably eliminate all such cases and their attendant high mortality.

The work presented here was done on private patients in a fairly characteristic residential community, Chicago's north shore suburbs. Sahli hemoglobinometers were used in making hemoglobin estimations. Of the 382 patients, 185, or 48 per cent, were primiparas. The majority of them came for care early in pregnancy, 66 per cent making their initial visit during the first trimester, 30 per cent during the second and 4 per cent during the third.

The first series of 160 cases, reported in March, 1928, represented merely the collection of as many blood counts as possible from my records. Since that time an effort has been made to obtain a blood count in each trimester, one within three days after delivery, one on the day the patient leaves the hospital, one eight weeks after delivery, and one at least five months after delivery. The last 222 patients, therefore, have been observed more carefully. Of these, 144, or 65 per cent, developed an anemia in which the hemoglobin went below 65 per cent and the red cells well below 4,000,000.

In the 382 patients observed, both treated and untreated, anemic and nonanemic, the average hemoglobin estimations for the first, second and third trimesters, respectively, were 73, 69 and 66 per cent. The average red cell counts were 4.05, 3.94 and 3.87. This shows a progressive anemia as pregnancy advances and a more marked reduction of hemoglobin than of red cells.

There was no difference in tendency toward anemia between multiparas and primiparas. The averages were kept separately for all trimesters and were found to be almost identical—hemoglobin 65 per cent and red cells 3.94 and 3.97 for multiparas and primiparas, respectively.

TABLE 1.—*Blood Counts Before and After Delivery in All Cases Observed*

233	hemoglobins in the first trimester average 73.1 per cent.
233	red cell counts in the first trimester average 4.05.
265	hemoglobins in the second trimester average 69 per cent.
247	red cell counts in the second trimester average 3.95.
382	hemoglobins in the third trimester average 66 per cent.
353	red cell counts in the third trimester average 3.88.
179	hemoglobins within three days after delivery average 75.53 per cent.
179	red cell counts within three days after delivery average 4.10.
158	hemoglobins eleven days post partum average 82.06 per cent.
158	red cell counts eleven days post partum average 4.40.
162	hemoglobins eight weeks post partum average 75.37 per cent.
162	red cell counts eight weeks post partum average 4.36.
103	hemoglobins of the same women five months from delivery average 83.28 per cent.
103	red cell counts of the same women five months from delivery average 4.44.

What happens during the last two weeks of pregnancy is not definitely known and should be studied. Close observation will probably show a rise in both hemoglobin and red cells during the last two weeks. Kuhnel's curve showed a rise, although a very irregular one.

Delivery apparently causes another decrease in both hemoglobin and red cells. My associate, Dr. Philip H. Smith, recently observed sixty-three cases in which he made a blood count as the patient entered for delivery, and another count forty-eight hours after delivery. Without an exception, both the hemoglobin and the red cell count were lowered. The average hemoglobin estimation dropped from 75 per cent to 60 per cent and the average red cell count from 3.99 to 3.57. There were no cases of hemorrhage included in the figures.

After delivery there is a fairly rapid return to normal in the majority of cases. According to Kuhnel, however, this is not complete for many months. During the two weeks of hospitalization the average hemoglobin rose from 75 per cent to 82 per cent and the red cells from 4.09 to 4.40. Eight weeks post partum,

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

80 per cent of the patients showed another loss of hemoglobin but a stationary red count. The average hemoglobin estimation decreased from 82 per cent to 75 per cent and the average red cell count remained the same, 4.40.

One hundred and three of the patients studied returned, in response to a letter, when the infant was

TABLE 2.—*Blood Counts in Thirty-Three Treated Patients*

33	hemoglobins in the first trimester average 67.79 per cent.	
33	red cell counts in the first trimester average 4.05.	
24	of the 33 patients improved with treatment:	
	Hemoglobin (low)	52 per cent
	Hemoglobin (finish)	63 per cent
	Red cell count (low)	3.43
	Red cell count (finish)	3.90
9	did not respond to treatment:	
	Hemoglobin (low)	63 per cent
	Hemoglobin (finish)	50 per cent
	Red cell count (low)	3.88
	Red cell count (finish)	3.24
27	hemoglobins within three days after delivery average 67 per cent.	
27	red cell counts within three days after delivery average 3.68.	
25	hemoglobins eleven days post partum average 74.68 per cent.	
25	red cell counts eleven days post partum average 4.09.	
22	hemoglobins eight weeks post partum average 67.6 per cent.	
22	red cell counts eight weeks post partum average 4.20.	
16	hemoglobins five months after delivery average 78.31 per cent.	
16	red cell counts five months after delivery average 4.28.	
Average weekly gain in weight was 11 ounces.		
Average weekly gain in weight for the whole group was 10 ounces.		

5 months old. The average count of these 103, which should be characteristic, showed hemoglobin 83 per cent and red cells 4.44.

Although what would be called anemia, with hemoglobin below 65 per cent, developed in 65 per cent of the patients, only seventy-four, or 19 per cent, received any treatment except diet and simple iron and liver preparations. If examination showed the hemoglobin to be 70 per cent or lower, the patient was given a preparation of arsenic and iron to take by mouth. In a small number of cases, liver and liver extract were prescribed. Theoretically, liver or its extract should influence the anemia of pregnancy because there have recently been reported six cases of pernicious anemia of pregnancy that were cured by its use, some of them prior to delivery. It is not certain, however, that the severe physiologic anemia of pregnancy develops into the pernicious type. All that one can say is that it seems reasonable that it should, especially in view of the fact that in none of the 500 or more cases of pernicious anemia of pregnancy reported thus far has any prenatal care been given. All the cases reported were merely discovered. My impression from trying liver therapy a number of times, however, is that it does not have as good an effect as iron or a combination of iron and arsenic. Iron, like calcium, seems to be indispensable to the pregnant woman.

As stated before, seventy-four of 250 patients did no respond to diet and tonics. These seventy-four were given from twelve to twenty exposures to the ultraviolet ray at two day intervals and were given injections of iron at the same time. Fifty-one of the seventy-four improved satisfactorily. Complete data are not available on all of these, but in the last series of cases in which more careful observation was made, thirty-three patients were treated and twenty-four showed improvement, while nine became more anemic in spite of the treatment. The improvement as shown by the chart, although moderate, constitutes not only an improvement but also a reaction against a downward curve. It is difficult to understand how the condition of the blood in pregnancy is influenced much by dilution if the majority of cases of anemia respond to the treatment. The average weekly gain in weight for the thirty-three patients that required treatment was 11 ounces (312 Gm.), whereas the average weekly gain in weight of the 382 was only 10 ounces (283 Gm.). It may be that the small number not responding to treatment constitute cases of hydremia.

Another important feature of the treatment of anemia of pregnancy, like that of all other anemias, is the elimination of foci of infection. Pyelitis, infected teeth, tonsillitis and other infections of the upper respiratory tract all produce a tendency toward anemia, and the anemia of pregnancy will be aggravated by them. No data were kept to show the relation of infection to the anemias reported here, but among my private patients last year nine tonsillectomies were performed in early pregnancy in an attempt to eliminate some of these infections.

One hundred and thirty-seven mothers and infants were grouped with the hope of obtaining some information as to the cause of anemia. Eighty-four pairs were in like groups and fifty-three pairs in unlike groups. The mothers of like infants averaged 63 per cent hemoglobin and 3.73 red cells, and those of unlike infants 67 per cent hemoglobin and 3.83 red cells. In twenty of the thirty-three patients requiring treatment, fifteen were in like groups and five in unlike groups. Among eleven very severe cases in which the hemoglobin was between 40 and 60 per cent at term, there were nine in which mother and infant were compatible.

There were sixteen differential blood counts made, all of which suggested secondary anemia. They are arranged in table 3.

In table 4 there are listed sixteen cases that came to delivery with an average hemoglobin of 50 per cent and an average red cell count of 3.12. These were from among patients treated with apparently little or no result. Sixteen cases do not seem to be an adequate number from which to draw any conclusions, but the data are published here with the hope that some interest may be aroused in the subject. Only two of these

TABLE 3.—*Differential Blood Counts in Cases Resembling Secondary Anemia*

Number	Polymorphonuclears	Large Lymphocytes	Small Lymphocytes	Eosinophils	Basophils	Transitionals	Pale Centers	Poikilocytes	Anisocytosis	Polychromatophilia	Nucleated Red Cells
1.....	69	10	13	3	2	3	+	+	++	0	0
2.....	67	19	8	7	5	2	+	0	+	0	0
3.....	66	16	14	4	4	4	+	0	+	0	0
4.....	69	10	15	2	1	3	+	+	+	0	0
5.....	70	7	18	2	1	2	+	+	+	0	0
6.....	68	10	13	3	2	4	+	+	+	+	0
7.....	68	8	15	4	2	3	+	0	+	0	0
8.....	79	4	9	..	1	7	+	0	+	0	0
9.....	59	14	13	5	1	8	+	0	+	0	0
10.....	68	7	19	4	..	2	+	0	+	0	0
11.....	80	6	10	1	..	3	0	0	0	0	0
12.....	70	4	23	1	..	2	+	+	+	+	0
13.....	69	7	20	..	3	1	..	..	..	..	..
14.....	76	4	15	2	2	1	..	..	..	..	..
15.....	85	6	11	..	..	2	+	0	0	0	0
16.....	51	7	30	4	..	8	..	..	..	..	..

patients could be called anemic at the first visit. The labors of these sixteen women with severe anemia were not abnormally long. Short, painless labor is a characteristic observation in pernicious anemia of pregnancy. What could be called inertia developed in only two patients. All but three were average-sized women. The infants averaged 8 pounds (3.6 Kg.), whereas the average weight for the 382 infants was 7 pounds 6

ounces (3.3 Kg.). These women lost more blood than the average patient. As stated, nine of eleven pairs that were grouped were compatible. The average weekly gain in weight for this group was 13.7 ounces (388 Gm.) as compared with 10 ounces (311 Gm.) for the entire group. Hydremia evidently played a part in this group. Two patients were known to have infections, one a diseased antrum and one pyelitis. Recovery from anemia of the patients in this group seems very slow and in two or three cases rather alarming in view of the fact that no apparent cause for the anemia can be found other than the recent pregnancy.

CONCLUSIONS

1. The majority of women, when pregnant, develop anemia.
2. The anemia grows worse as pregnancy advances.
3. The anemia of pregnancy will respond to proper treatment in the majority of cases.
4. Examinations and treatment for anemia should be included in the routine care of pregnant women.

TABLE 4.—*Blood Counts and Delivery Data in Sixteen Cases of Severe Anemia*

Number	First Visit: Hemoglobin, per Cent	First Visit: Red Blood Cells	End of Third Trimester: Hemoglobin, per Cent	End of Third Trimester: Red Blood Cells	Latest Record: Hemoglobin, per Cent	Latest Record: Red Blood Cells	Age of Baby (Mo.)	Primiparas, Hours of Labor	Multiparas, Hours of Labor	Inertia	Height of Mother: Feet	Height of Mother: Inches	Weight of Mother (At Start) Lbs.	Weight of Baby *: Pounds	Weight of Baby *: Ounces	Blood Lost, Cc.	Blood Group of Mother	Blood Group of Infant	Weeks Observed	Weight Gained †
1.....	..	....	50	....	..	....	..	10	....	No	5	6	140	7	15	150	...	...	29	18
2.....	..	....	44	2.64	..	....	..	..	1½	No	4	11	96	6	..	100	...	...	31	25
3.....	86	4.02	40	3.00	64	3.92	3	15	....	No	5	6	120	9	8	125	IV	IV	32	29
4.....	68	4.11	50	3.10	75	3.54	10	..	6	No	5	3½	128	9	8	200	IV	...	29	15
5.....	60	3.32	58	3.38	78	4.20	9	11	....	No	5	4	117	8	2	600	IV	IV	31	29
6.....	..	....	48	3.00	..	....	..	..	10½	Yes	..	....	134	6	9	100	...	...	31	17
7.....	70	3.54	41	2.93	50	4.00	3	..	14	Yes	5	2	179	7	3	100	IV	III	31	28
8.....	79	4.27	52	3.86	70	4.48	15	8½	....	No	5	....	84	9	..	...	IV	IV	31	29
9.....	66	3.70	55	3.12	82	4.14	2	..	6	No	5	4	137	9	14	100	IV	IV	29	12
10.....	50	2.48	58	3.26	48	3.16	2	..	8	Yes	..	....	112	6	..	100	IV	IV	21	12
11.....	88	3.92	60	3.32	62	3.80	2	17	....	No	5	2½	100	7	15	700	IV	IV	31	39
12.....	88	3.61	50	3.05	60	3.90	2	..	12	No	5	4	102	8	2	...	IV	IV	25	36
13.....	..	....	55	3.10	71	4.17	12	17	....	No	5	7	116	7	13	300	IV	II	30	22
14.....	62	4.39	48	3.28	58	3.96	2	..	5½	No	5	3	109	7	7	250	II	II	24	23
15.....	79	4.08	55	2.95	63	3.78	1½	..	5	No	4	11	125	8	10	150	II	II	28	22
16.....	74	3.72	50	2.86	63	3.40	2½	..	4½	No	5	7	142	8	3	150	III	II	23	18

* Average weight of infant, 8 pounds.
† Average weekly weight gain, 13.7 ounces.

5. Since certain patients showing severe anemia near term have a tendency to hemorrhage, since little is known about the origin of pernicious anemia of pregnancy and since it has been reported that the anemia responds to transfusion, the blood of these patients with severe anemia should be typed and matched for transfusion of whole blood as they come to the delivery room.

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ABSTRACT OF DISCUSSION

DR. RAYMOND E. WATKINS, Portland, Ore.: The study of the blood picture should necessarily be a part of all prenatal work. It is just as necessary to know the condition of the blood in the pregnant woman as it is in surgical and gynecologic cases before operation. Dr. Galloway has done some interesting research work along this line, and the statistics he has given us are going to be of great benefit in prenatal work. Anemia is that condition of the blood in which there is a lowering of the red blood cells and hemoglobin, or both, below the standard for an individual of the patient's age and sex. There are four fundamental causes of anemia: (1) hemorrhage from the body, the hemorrhagic type being true secondary anemia; (2) disturbance of the blood building tissue, the aplastic type; (3) the hemolytic type due to hemolysis, and (4) deficient intake of the proper types of materials that go toward forming blood. If we apply these four fundamental causes of anemia to pregnancy, I think we all agree that hemorrhage can be ruled out—I am talking about the average normal pregnancy—and the aplastic type may be ruled out. During the first trimester there undoubtedly is insufficient intake of proper types of food because of the gastric disturbances, causing nausea and vomiting. This often extends into the second trimester, but it does not explain the anemia in the third trimester of pregnancy, when the woman is apparently thriving well physically. The theory has been advanced that there is a hemolytic agent that produces anemia, and it has been described as coming from the ectodermal cells of the placenta. I should like to ask what actual proof there is of this except our clinical observations. We have noticed that early there is often a lowering of blood pressure, and I think in a good many cases there is quickening of the pulse during pregnancy. These changes plus an altered blood picture indicate a changed physiology of the blood and circulation. What is the significance of these symptoms? Is it a normal process? If the average woman during pregnancy develops anemia, are we to call it abnormal?

DR. CHARLES EDWIN GALLOWAY, Evanston, Ill.: I am not able to answer Dr. Watkins' question as to who has demonstrated destruction of erythrocytes in the placenta. I will refer him to Paul Esch's review in the German literature. Esch has published a paper about every four or five years since 1911 on the anemia of pregnancy. In 1927 he wrote a very good paper that reviewed the literature up to that time. Five or six men have demonstrated destruction of erythrocytes in the placenta. I believe the so-called physiologic anemia of pregnancy is a true anemia. I do not believe it is dangerous, except that certain patients do develop very severe anemia and probably some of them acquire the so-called pernicious anemia of pregnancy which carries with it a mortality of between 50 and 70 per cent. I think that there must be some relationship between the physiologic anemia of pregnancy and the pernicious anemia of pregnancy, although no one has ever been able to demonstrate it. There has never been a case of pernicious anemia of pregnancy that has been observed prior to its onset.

Increase in Life Expectancy.—During the last quarter of a century from ten to twelve years have been added to the average expectancy of life. This statement, which is often made, is usually misunderstood. It does not mean that ten years have been added to the expectancy of life at all ages, but simply that ten years have been added to the average expectancy, which is very different indeed. This increase in the average expectancy of life is due almost entirely to a greatly diminished mortality rate during the first few years of life, so that a much larger proportion of individuals live to adult age. In fact, there has been practically no increase in life expectancy of those 50 years of age or over.—Harris, M. L.: Periodic Health Examinations, *Illinois M. J.*, November, 1929.

SOLUTION OF ACACIA AND SODIUM CHLORIDE IN HEMORRHAGE AND SHOCK

EFFECTS OF INTRAVENOUS ADMINISTRATION *

LESTER D. HUFFMAN, M.D.
LOS ANGELES

The intravenous administration of colloidal solutions in combating the effects of hemorrhage or shock was introduced into medical practice by Hogan,[1] who advocated the use of a gelatin solution. This practice, however, did not attract wide attention until the World War, when Bayliss [2] suggested the use of acacia and solution of sodium chloride to maintain the blood volume in wound shock. Bayliss reported that such solutions were nontoxic and his views were supported by observations made both at the bedside and in the laboratory;[3] nevertheless they did not gain universal credence. To administer a substance intravenously that is foreign to the blood stream was a unique proposal in medical practice and many were unwilling to believe that such a procedure was indeed innocuous.[4] Furthermore, certain essential precautions in the preparation of solutions for use intravenously were not generally recognized and carried out at that time. In consequence, there were occasional reports of untoward reactions following the administration of a solution of acacia and sodium chloride.[5]

Investigation of this problem carried out at the request of the Council on Pharmacy and Chemistry of the American Medical Association, as well as by others,[6] showed the potential hazard of all forms of intravenous medication. The use of acacia was particularly condemned because it produced serious disturbances in the physicochemical equilibrium when added to blood in a test-tube. It seemed probable that similar changes should occur in the blood stream and it was assumed that the potential harm outweighed the possible benefit from such a procedure.[7] In consequence, the intravenous use of a solution of acacia and sodium chloride rapidly fell into disuse in this country.

Evidences of beneficial effects from the use of a solution of acacia and sodium chloride, however, were not lacking. Bayliss,[8] Rous and Wilson,[9] and Mann [10] demonstrated that such a solution has beneficial effects in combating hemorrhage and surgical shock in animals. Keith, in association with the British Shock Committee, likewise secured excellent results with the clinical use of solutions of acacia and sodium chloride in the treatment of wound shock and hemorrhage.[11] He found that such solutions were nontoxic when properly prepared. It was at his suggestion that this study was made and the use of a solution of acacia and sodium chloride advised in selected cases of surgical shock at the Mayo Clinic.

More than two years ago I reported results in nineteen cases.[12] These results warranted a more extended study of the use of the solution in surgical shock. Since then the solution has been used in a variety of surgical conditions. I shall present here the results obtained in a series of more than 300 cases.

PREPARATION OF SOLUTION OF ACACIA AND SODIUM CHLORIDE FOR INTRAVENOUS ADMINISTRATION

Preliminary studies in animals indicated the need of considerable care in the preparation of a solution of acacia and sodium chloride for intravenous administration. The original method of Telfer [13] of preparing the solution has been modified by Osterberg [14] and the preparation according to his direction is very satisfactory for clinical use as a routine.

The acacia must be in the form of lumps (pearls) of number 1 extra quality. A solution of double strength is first prepared and this is diluted to the required concentration with freshly distilled water. Eight liters of solution is prepared by weighing 480 Gm. of acacia and 72 Gm. of sodium chloride (C. P.) into a 4-liter beaker. Approximately 500 cc. of triple-distilled water is poured into the beaker containing the gum and the mixture heated on a hot water or steam bath while it is stirred with a glass rod. A large portion of the gum dissolves rapidly. The thick solution thus obtained is carefully poured off from the residual gum into a large flask and to the residue about 500 cc. of triple-distilled water is added. The gum is then extracted again by heating on a steam bath and the supernatant solution is poured off. This extraction is repeated until all the gum is dissolved. It is important to add only a small amount of water at each stage, since the gum goes into solution more readily when the lumps rub against one another freely. The solution is then made up to a total volume of 8 liters in a 12-liter pyrex flask. This turbid solution, which contains some dirty impurities, is sterilized by autoclave. To remove the precipitate, the solution is filtered through a sterile Buchner funnel into a sterile flask through soft filter papers. The filtrate is then resterilized twice in the autoclave. Such sterilization results in the precipitation of flocculent material which is objectionable. Attempts to get rid of this precipitation by filtration and resterilization of the filtrate are of no avail since each period of heating results in further precipitation. It is best to siphon off the clear solution above the flocculent precipitate under sterile conditions into sterile bottles. These bottles containing approxi-

* Work done in the Division of Medicine, the Mayo Clinic, Rochester, Minn.

* Read before the Section on Pharmacology and Therapeutics at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 12, 1929.

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2. Bayliss, W. M.: Methods of Raising a Low Arterial Pressure, Proc. Roy. Soc. London B **89**: 380-393, 1916-1917; Intravenous Injection in Wound Shock, Brit. M. J. **2**: 553-556 (May 18) 1918.

3. Erlanger, J., and Gasser, H. S.: Hypertonic Gum Acacia and Glucose in Secondary Traumatic Shock, Ann. Surg. **69**: 389-421 (April) 1919. Hurwitz, S. H.: Intravenous Injections of Colloidal Solutions of Acacia in Hemorrhage: Preliminary Note, J. A. M. A. **68**: 699-701 (March 3) 1917. Lynwood, E. A.: Treatment of Hemorrhage and Shock by Intravenous Solutions of Whole or Citrated Blood and Gum Salt Solution, Illinois M. J. **38**: 22-24 (July) 1920.

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6. Appelmans, M.: Les injections isovisqueuses dans le sang, Arch. internat. de méd. expér. **2**: 111-133, 1925-1926.

7. Hanzlik, P. J.; De Eds, F., and Tainter, M. L.: Blood and Symptomatic Changes Following the Intravenous Administration of a Variety of Agents and Solutions, Arch. Int. Med. **36**: 447-506 (Oct.) 1925. Kruse, T. K.: The Pharmacology of Acacia, Am. J. Physiol. **49**: 137, 1919.

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9. Rous, Peyton; and Wilson, G. W.: Fluid Substitutes for Transfusion After Hemorrhage, J. A. M. A. **70**: 219-222 (Jan. 26) 1918.

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11. Reports of the Special Investigation Committee on Surgical Shock and Allied Conditions, Report number 27: IX. Blood Volume Changes in Wound Shock and Primary Haemorrhage, Medical Research Committee by N. M. Keith, Oxford University Press, 1919.

12. Huffman, L. D.: Intravenous Use of Solutions of Gum Arabic in Shock, Proc. Staff Meet. Mayo Clin. **2**: 84-85 (April 20) 1927.

13. Reports of the Special Investigation Committee on Surgical Shock and Allied Conditions, numbers 1-7, Special Report Series number 25, Wound Shock and Haemorrhage, Medical Research Committee, Oxford University Press, 1919.

14. Osterberg, A. E.: Personal communication to the author.

mately 800 cc. of the gum solution are stoppered tightly with sterile plugs and gauze. Such a solution appears to be nontoxic and remains satisfactory for intravenous injection for several months.

It is the practice at the Mayo Clinic to test for toxicity all solutions to be used intravenously for patients by injecting them first into animals, a practice which was applied to acacia, always in larger dosage than is planned for man. Normal dogs were used as a routine; sometimes rabbits and guinea-pigs were used. If untoward reaction did not appear, the solution was considered satisfactory for patients.

TABLE 1.—*Types of Cases Studied in Which Solution of Acacia and Sodium Chloride Was Given in Shock*

	Cases	In-jections	Average Amount Injected, Cc.
Gynecologic operation	92	96	650
Operation on colon and rectum	46	47	700
Operation in upper part of the abdomen	38	40	500
Neurologic operation	24	28	800
Exploratory operation	20	24	650
Operation on thyroid gland	6	6	750
Operation on chest	3	3	500
Urologic operation	16	16	700
Operation on extremities	4	4	600
Operations, miscellaneous	34	38	500
Medical, miscellaneous	15	15	350
Obstetric	6	8	850

CLINICAL USE OF THE SOLUTION

Solution of acacia and sodium chloride has been used during and following a great variety of surgical procedures and in a limited number of medical and obstetric cases (table 1). In most instances the condition of the patient at the time of administration was regarded as critical. The solution was most frequently used as an adjuvant in the treatment of surgical shock. It was also used during and following hemorrhage. In two cases of hemorrhage in which so much blood had been lost that the patients were moribund, solutions of dextrose and sodium chloride were not effective, but the injection of solution of acacia and sodium chloride was successful in maintaining the circulation and tiding the patients over until transfusion could be done. In less acute cases the condition of the patient was often so much improved that subsequent transfusion was not necessary.

Solution of acacia and sodium chloride was also used a few times in cases of jaundice with hemorrhage and prolonged coagulation time of the blood. Although there was some decrease in the coagulation time, the effect of the solution was much less satisfactory than transfusion in the treatment of such cases. Adson and McIndoe [15] worked out a method for decreasing the surgical risk and mortality in intracranial operations by a combination of transfusion with the injection of the solution of acacia and sodium chloride.

Care must be used in the injection of the solution. In much of the experimental work reported in animals sufficient attention has not been paid to this factor. A change in the blood volume of 30 to 40 per cent has often been produced in from one to eight minutes and the results of such experiments then reported as simulating results in clinical practice. In general, solution of acacia and sodium chloride should not be given intravenously to patients faster than 20 cc. a minute. The solution should be warmed to a temperature of 100 F. Blood pressure readings were taken at intervals during the infusion and the latter was terminated when the blood pressure reached a sufficiently high level. Not more than 800 cc. was given at any one time and the injection ordinarily was not repeated. One patient, however, received three injections of 800 cc. each within twenty-four hours without untoward effects. In no instance was there gross evidence of toxicity such as vomiting, collapse, cyanosis, pain in the chest or increased muscular or nervous instability.

CLINICAL OBSERVATION DURING THE INJECTION OF SOLUTION OF ACACIA AND SODIUM CHLORIDE

An increase in the blood pressure occurred in all of the 200 or more cases in which records were made during the intravenous administration of the solution. The blood pressure increased progressively with the volume of solution administered; usually there was a rise of 10 to 15 mm. of mercury after the injection of from 100 to 150 cc. The injection of 700 to 800 cc. of solution frequently increased the systolic blood pressure to 100 mm. of mercury or more in cases in which the initial systolic pressure was from 60 to 80 mm. of mercury. The diastolic pressure increased to a lesser extent, ordinarily having a rise of from 5 to 20 mm. of mercury (table 2).

As a rule the blood pressure was well maintained following the injection. A maximal rise occurred from a half hour to an hour after the conclusion of the injection. This was sometimes followed by a decrease of 10 to 15 mm. which lasted over a period of six to eight hours. A second injection then usually sufficed to maintain adequate pressure, although in two cases a third injection was required from eight to ten hours later. In two other cases there was a fairly rapid fall in the systolic blood pressure after an initial rise to from 120 to 130 mm. of mercury, but in these cases bleeding from unsecured blood vessels was discovered.

In six cases the systolic pressure was increased from 30 to 50 mm. above the average normal. There had been antecedent hypertension, and increase above normal blood pressure would seem to be desirable in combating shock.

Solution of acacia and sodium chloride was given to a few patients during or following prolonged and

TABLE 2.—*Effects During Infusion of Solution of Acacia and Sodium Chloride on a Patient in Shock*

Time	Amount Injected, Cc.	Blood Pressure: Systolic	Blood Pressure: Diastolic	Respiration Rate, Each Minute	Pulse Rate, Each Minute	Viscosity of Whole Blood	Agglutination	Hemolysis	Coagulation Time, Minutes	Comment
10:02 a. m.	...	68	52	32	144	3.2	.....	.....	4.00	Cyanosis
10:05 a. m.	...	...	..	..	...	...	.....	.....	....	Injection started
10:15 a. m.	150	75	55	32	144	...	.....	.....	....	Cyanosis
10:30 a. m.	300	85	55	30	144	3.8	None	None	....	Cyanosis
10:45 a. m.	425	90	60	28	135	...	.....	.....	....	Cyanosis
11:00 a. m.	600	100	60	28	130	...	.....	.....	3.30	Slight cyanosis
11:15 a. m.	750	110	62	28	126	3.8	None	None	....	Injection completed; slight cyanosis
12:00 noon	...	120	68	28	124	3.6	None	None	3.00	Slight cyanosis
2:00 p. m.	...	118	68	24	115	...	.....	.....	....	Slight cyanosis
6:00 p. m.	...	116	70	22	110	3.8	.....	.....	....	Skin pink

15. McIndoe, A. H.: Prolonged Intravenous Administration of Gum Acacia-Citrated Blood Sequence During Severe Intercranial Operations, Proc. Staff Meet. Mayo Clin. 4: 52-53, 1929.

extensive operations in which it was believed that surgical shock would surely develop. In these cases in which the blood pressure was normal or only slightly reduced, there was a slight increase (5 mm.) in the systolic pressure following the injection of each hundred cubic centimeters of solution. This increase persisted for several hours and then declined to the normal level. Postoperative shock did not develop in this group of cases.

In general the pulse rate decreased and the blood pressure increased; the improvement in circulation was

TABLE 3.—*Effects on the Urinary Constituents of Solution of Acacia and Sodium Chloride in Shock*

Case	Specific Gravity	Albumin *	Casts *	Leukocytes *	Erythrocytes *	Nitrogen, Gm. for Each 100 Cc.	Urea Nitrogen, Gm. for Each 100 Cc.	Ammonium Nitrogen, Gm. for Each 100 Cc.	Comment
1	1.020	1	..	..	..	...	...	...	Before injection
..	1.028	1	1	1	1	...	...	...	After injection
2	1.020	..	..	1	..	2.0	1.5	0.1	Before injection
..	1.028	..	1	..	..	2.2	1.8	0.2	After injection
3	1.017	1	..	..	..	...	...	...	Before injection
..	1.027	1	1	..	..	...	...	...	Five hours after injection
..	1.020	1	1	1	1	...	...	...	Twenty-two hours after injection
..	1.020	1	1	1	..	...	...	...	Forty-eight hours after injection

* If present, graded on the basis of 1 to 4.

further shown by improvement in the volume and quality of the pulse (table 2). The decrease in the pulse rate was not always proportional to the increase in the blood pressure and occasionally the pulse rate did not change for several hours. In some cases of shock the pulse rate was slow even though there was a marked fall in blood pressure. In such cases the infusion of solution of acacia and sodium chloride caused a rise in the blood pressure and slowing of the pulse rate.

In a state of postoperative surgical shock, respiration is usually rapid and shallow. With improvement in the circulation and elevation of the blood pressure the respiration gradually becomes slower and deeper and the peripheral cyanosis lessens. There was no indication of respiratory embarrassment following the injection of the solution, although the evidences of improved respiratory function have been convincing. There were no clinical symptoms at any time suggestive of pulmonary embolism and it was a rare observation in cases that came to necropsy.

CHANGES IN THE URINE

Moutard-Martin and Richet,[16] and later Kruse, reported decreased output of urine in animals following the intravenous injection of solutions of acacia.

The output of urine of patients is both relatively and absolutely decreased after operation; it is likewise decreased in surgical shock, although there is a slight increase following the injection of solution of acacia and sodium chloride. The average output of urine the first day after operation in 200 cases taken at random was 550 cc., with an intake of 1,800 cc. In a series of 100 cases of surgical shock in which solution of acacia and sodium chloride was not given there was an average output of 500 cc. with an intake of 2,100 cc. The average output of urine of fifty patients with postoperative surgical shock who were treated with the solution was 650 cc. with a total intake of 2,350 cc.

The specific gravity of the urine varied from 1.015 to 1.035. In a few cases, traces of albumin were present in the urine following the injection when it had not been present before (table 3). Erythrocytes and leukocytes were slightly increased in the urinary sediment in only two cases, although hyaline casts were present in 25 or more per cent of the specimens of urine examined. It should be remembered, however, that hyaline casts frequently occur following ether anesthesia. The urine occasionally contained traces of reducing substances.

The nitrogen partition of the urine was not changed in the two cases in which it was studied, although the concentration of urine was slightly increased. The excretion of phenolsulphonphthalein was not impaired in the three cases in which tests were made.

CHEMICAL CHANGES IN THE BLOOD

Numerous determinations of the blood urea were made before and after the administration of solution of acacia and sodium chloride (table 4). After the injection usually a decrease occurred which possibly could be ascribed to dilution of the blood by the solution. Before injection the blood urea was found to be elevated in several cases, in one to 115 mg. for each hundred cubic centimeters, but in all there was a return to normal after removal of the underlying cause independently of the injection of the solution. In a number of cases normal values for the uric acid, creatinine and amino-acid nitrogen likewise were obtained. Neither in animals nor in man did the injection of the solution produce either an accumulation or a retention of nitrogenous products in the blood.

The carbon dioxide combining power of the blood decreased from 5 to 10 per cent by volume during the hour subsequent to the introduction of the solution. Twenty-four hours later and subsequently, normal values were obtained (table 5).

Changes were not noted in the blood sugar or serum bilirubin. A bromsulphalein test was negative in one case eighteen hours after the infusion.

TABLE 4.—*Effects on the Blood Urea of Solution of Acacia and Sodium Chloride in Shock*

	Urea in Blood, Mg. for Each 100 Cc.					
		Hours After Injection				
Case	Before Injection	1 to 12	24	48	72	96
4	60	..	42	..	25	..
5	...	24	..	20	..	27
6	40	..	28	..	..	30
7	24	28	25	..	..	22
8	...	..	18	..	..	24
9	110	80	96	104	..	..
10	60	56	..	72	..	40

PHYSICOCHEMICAL CHANGES IN THE BLOOD

Previous discussions of the broader aspects of the intravenous use of acacia have stressed the significance of changes in the physicochemical equilibrium of the blood. In this series of cases a few determinations of the viscosity of the whole blood were made with the Hess viscosimeter before and after the injection of solution of acacia and sodium chloride. Usually a slight increase was noted during the injection and for several hours afterward. The fragility of the corpuscles was not affected, whereas the coagulation time of the blood was frequently somewhat decreased.

16. Moutard-Martin, R., and Richet, Charles: Recherches expérimentales sur la polyurie, Arch. de physiol. norm. et path. 8: 1-48, 1881.

There was no evidence of hemolysis or of agglutination of the erythrocytes (table 6).

The sedimentation time was not determined quantitatively, but a marked increase in the sedimentation rate was readily apparent on casual observation of samples of oxalated blood. The blood grouping was not altered. Unusual changes were not seen in the blood cells when they were examined on a slide or in a warm box. Counts of the leukocytes during the first four days after injection could not be made by the usual technic because of interference from acacia precipitated in the counting chamber. Thereafter notable changes were not observed.

TABLE 5.—*Chemical Changes in the Blood After Administration of Solution of Acacia and Sodium Chloride in Shock*

Blood Pressure: Systolic	Blood Pressure: Diastolic	Acacia in Blood, Gm.	Carbon Dioxide Combining Power of Plasma, per Cent by Volume	Blood Urea, Mg. for Each 100 Cc.	Serum Chloride, Mg. for Each 100 Cc.	Hemoglobin, Gm. for Each 100 Cc. (Acid Hematin)	Serum Bilirubin, Mg. for Each 100 Cc.	Viscosity of Whole Blood	Fragility of Corpuscles	Cells by Hematocrit, per Cent	Erythrocytes, Millions	Comment
70	50	..	40	105	...	..	...	...	.....	40	...	Before injection
110	70	40	42	108	680	10	1.8	4.2	Normal	30	3.0	One hour after injection
110	70	..	..	...	...	..	...	4.0	.....	32	3.0	Five hours after injection
120	75	30	55	100	650	11	2.0	4.0	Normal	35	3.5	Twenty-four hours after injection
120	70	22	55	90	...	..	...	3.2	.....	36	3.7	Forty-eight hours after injection
125	75	10	..	58	590	12	...	...	.....	36	3.7	Ninety-six hours after injection
...	..	trace	..	30	...	..	1.8	...	.....	..	...	One hundred thirty hours after injection; leukocytes numbered 7,600

THE RATE OF DISAPPEARANCE OF ACACIA FROM THE BLOOD STREAM

Various authors have emphasized the retention of acacia in the blood stream for considerable periods after the intravenous injection. In the series of cases which I observed, the acacia in the blood stream was determined quantitatively by distillation of the blood with hydrochloric acid and the colorimetric determination of the furfuraldehyde found. It was possible by this means both to trace the rate of disappearance of the acacia from the blood stream and to note its excretion in the urine. There was considerable individual variation, the cause of which was not determined with certainty. After the injection of 500 to 750 cc. of 6 per cent solution of acacia and sodium chloride six days were required, on the average, for the complete disappearance of acacia from the blood. There was a suggestion that the rate of disappearance was slightly more rapid in cases of hypertension, but this again may be a question of individual variation only. Acacia was not isolated from the urine and identified with rigorous chemical precision. A gummy material, however, was readily precipitated from the urine by the addition of glacial acetic acid and alcohol, and much furfuraldehyde was obtained on acid distillation of the urine. In some cases more than half the total amount of acacia injected could be accounted for in the urine in this manner.

There was no delay in the disappearance of acacia from the blood stream following unilateral nephrectomy in patients. Bilateral nephrectomy in dogs, however, produced marked retention of acacia in the blood from seventy-two to a hundred hours after injection. The injection of solution of acacia and sodium chloride, and the resultant presence of acacia in the blood stream was without effect on the length of time the animals survived after bilateral nephrectomy.

TABLE 6.—*Physicochemical Effect on the Blood of Solution of Acacia and Sodium Chloride in Shock*

Agglutination	Hemolysis	Viscosity of Whole Blood	Fragility	Coagulation Time, Minutes	Comment
None	None	3	.....	5	Before injection
None	None	4	Normal	3.5	Fifteen minutes after injection
None	None	3.4	.....	3.5	Five hours after injection
None	.....	3	.....	4	Twenty-four hours after injection
.....	.....	...	.....	4.5	Forty-eight hours after injection

NECROPSY DATA

Necropsy was performed on twenty subjects who had been given the solution of acacia and sodium chloride and who died of their original disease a few hours or several days later. Careful examination of the tissues, grossly and microscopically, failed to show the slightest indication of any change that could reasonably be ascribed to the infusion. The incidence of pulmonary embolism in this series of cases was slightly less in comparison with the incidence among surgical patients not receiving the solution.

SUMMARY

Gross evidence of toxicity was not seen following the intravenous injection of solution of acacia and sodium chloride in shock. The blood pressure increased, the pulse rate decreased, the respiration deepened and the general condition of the patient improved. The need for transfusion was often obviated. In some cases, increased output of urine was noted. Injurious effects on the kidneys were not seen. Chemical changes in the blood of a harmful nature were not apparent. Physicochemical changes in the blood did not lead to harmful alterations in physiologic processes. Six days is usually required to rid the blood of acacia. Pathologic change resulting from the acacia was not demonstrated at necropsy. The therapeutic usefulness of solution of acacia and sodium chloride is confirmed.

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ABSTRACT OF DISCUSSION

DR. P. J. HANZLIK, San Francisco: Solution of acacia, as every one knows, was tried during the World War and was given up. Curiously enough, it seemed to be favored among English surgeons and it failed among American surgeons. The explanation of this discrepancy has not come to hand, but it may be intimately bound up with clinical variations and imperfect observation under the conditions of war. I might offer a correction here, in view of Dr. Huffman's statement that we made only physical-chemical observations. Such factors as effects on blood pressure and respiration, histologic pulmonary and cardiac changes, and effects on smooth muscle in guinea-pigs, pigeons and dogs were also described. Dr. Huffman has confirmed our results on the physical and chemical changes in animals. However, one is never certain of results obtained from groups of clinical cases. That was one of the difficulties encountered by clinicians during the war, and for that reason Bayliss and others made experimental studies, some of which confirmed the clinical impressions, but others did not. Dr. Yandell Henderson compared the resuscitative value of acacia and balanced salt solutions in shock and hemorrhage in dogs; he found that the majority of dogs treated with acacia died, whereas those left untreated lived, or at least lived longer. Dr. Gesell of the University of Michigan has had to give up the use of acacia in his experimental studies of respiration because the animals injected with it died sooner than those without it. We have amply demonstrated that the blood pressure in animals may be sustained at a higher level for half an hour or so, but gradually the blood becomes dark and sediments rapidly, and then the blood pressure may fall abruptly and the animal may die suddenly. There is a considerable variety of agents, physically and chemically different, which cause reactions resembling those of acacia. Fundamentally, there seems to be a disturbance in the colloidal equilibrium of the blood and tissues, but just what this is exactly we do not know. Nevertheless, there are good reasons to believe that this always occurs with foreign agents which present extensive surfaces, and such an agent is acacia. So far as the preparation of the acacia solution is concerned, it is known that the cleanest and most carefully prepared solutions have caused reactions. On the whole, it seems to me that there is no good basis for the use of acacia solution in the treatment of clinical shock.

DR. N. M. KEITH, Rochester, Minn.: In regard to the points which Dr. Hanzlik has raised, I became interested in these therapeutic problems when treating cases of hemorrhage and shock in France in 1918. The first patient to whom I gave solution of acacia had a serious reaction as the result of a toxic preparation. I then decided to discontinue giving this solution and to use only whole blood. Subsequently Dr. Bayliss urged me to give acacia solution another trial because he was convinced that a nontoxic solution had been prepared by Dr. Telfer. This solution did not cause any untoward reactions and in some cases its beneficial effects were marked. We found, of course, like everybody else, that in certain cases of severe shock it did not restore the blood volume or save life. Then, taking control cases, which were, I think, as satisfactory as those used in laboratory work because there were a large number of similar cases, we found that with acacia solution we got results comparable to those when whole blood was used. When this subject was brought up again three years ago, my attitude was this: Some toxic effects had been reported. Dr. Hanzlik had shown such effects in animals. On the other hand surgeons had noticed that in some cases of shock whole blood did not seem to be beneficial and even seemed harmful. I advised a trial of nontoxic acacia solution. Such a solution was prepared and large doses were first injected into animals and later were used in selected cases, and Dr. Huffman has shown decisively that it can produce definite beneficial effects. In discussing this subject, I wish to refer to the development of the use of sodium citrate as an anticoagulant, which has greatly simplified the technic for blood transfusion. When I was working in Dr. Abel's laboratory in Baltimore, Dr. Abel was strongly opposed to such a use of sodium citrate on toxicologic grounds. Several months later it was the subject of a report at a meeting held in Washington, at which Dr. Abel was present, and he was then convinced that the amount used when giving a transfusion to man was not toxic, and thus was not harmful. Dr. Huffman has demonstrated that acacia solution can be given in cases of serious shock without demonstrable toxic effects, and from his therapeutic results we must conclude that this solution is a useful agent in the treatment of hemorrhage and shock.

DR. H. M. LANDESMAN, Boston: In reference to this subject I heard an interesting paper by Dr. Randall of Rochester, in which he said that they tried acacia in a series of cases and found that it was harmless and worked just as well as blood transfusion. They inject it at the rate of about 25 cc. a minute and give from 500 to as high as 900 cc., and he said that they had had very little trouble. I want to ask Dr. Huffman what per cent of chloride he uses in this solution.

DR. L. D. HUFFMAN, Los Angeles: A number of important points have been brought out that I did not get to. Each hundred cubic centimeters of solution contains approximately 6 Gm. of acacia and 0.9 Gm. of sodium chloride. The injections are made at a rate not exceeding 20 cc. a minute. This I feel is of much importance and has not received due consideration in animal work. Frequently changes in blood volume of from 25 to 40 per cent are brought about in from one to five minutes and the results reported as simulating clinical conditions. I know of no clinical condition in which we purposely bring about such marked changes in so short a time. Reference was made to Dr. Randall's results, which were gratifying indeed. In two moribund patients with acute hemorrhage whom I saw and in whom dextrose and saline solutions had failed to improve the condition, acacia tided the patient over until transfusion could be done. In other cases the need for transfusion was entirely obviated.

EXHAUSTION STATES*

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The causes and the varied manifestations of exhaustion states are an ever increasing source of interest to the medical profession. The great increase in such conditions for the past ten years, particularly, has aroused much discussion as to probable causative factors.

We have examined the records of 688 patients, seen in the past two years, in which there was no specific underlying disease, as exophthalmic goiter or pernicious anemia. We found that 133, or 19.3 per cent of these, complained of "loss of pep" or exhaustion, in other words, about one in five people consulted the physician because of exhaustion. Although the normal span of life has been lengthened, largely as a result of preventive medical measures, there exist nevertheless increasing and varied causes of exhaustion. These causes may be divided as follows: first, the World War and its effect on the mental make-up of the people; second, the epidemic of influenza, and its persistent residuum; third the advent of prohibition, with poisonous intoxicants that have followed in its wake, and, fourth, the increasing number of automobiles, with carbon monoxide saturation of the atmosphere to a harmful degree.

There has been retardation in the accurate insight into this problem, because of the lack of authentic criteria to enable one to draw definite conclusions. Also there are insufficient data to portray the actual morphologic changes that develop in the patient, together with the inability to produce experimentally these symptoms in animals. Because of the many causes, the manifestations of early states of exhaustion are so insidious that a "full blown" condition develops before one is conscious of any abnormality. Until people have become properly educated to semiannual examinations

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and the immediate correction of variations from normal, little can be accomplished in this field as regards prophylaxis or treatment.

We present at this time not one specific type of exhaustion produced by a definite cause but four distinct groups of cases as follows: 860 gastric analyses, 140 distinct cases of hypothyroidism, 110 exhaustive states and twenty-two cases of definite neurosis, which cover a period of twenty years. We wish to show that there have been changes in persons of the same locality during this period of time. In the group of exhaustion states we believe that it is a manifestation of the organism as a whole in the production of such a state, rather than any form of endocrinopathy. Some of the causes of these manifestations may be classified under two headings: first, chronic infection in the upper respiratory and the biliary tract, and, second, mental depression as a result of marital discord or financial, business and other worries. These causes are distinct but not always the sole etiologic factors. When the proper restitution of these conditions has been brought about, the patient returns to normal activity. If the etiologic factor has not been corrected, in spite of all forms of medication he does not respond satisfactorily. A striking example of our premise would be a case of chronic gallbladder infection with exhaustion and lowered metabolism which does not respond satisfactorily to any form of treatment until the gallbladder infection has been surgically corrected, whereupon a rapid improvement results. Another which serves is the patient with marital difficulties present; for him there can be no satisfactory solution of the health problem until the marital situation is permanently corrected. Here there is a form of exhaustion as a result of fatigue of the organism as a whole, which has been carried to the point at which restitution fails to follow. The cells and fluids of the body suffer injuries as a whole of more or less serious and irremediable nature, but not as the result of any single or combined endocrinopathy.

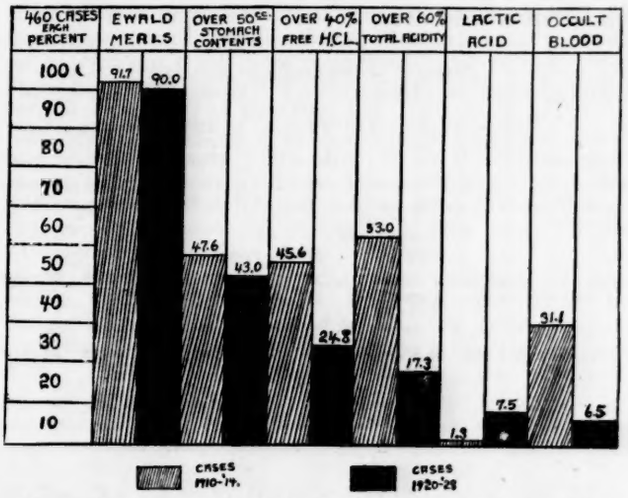
In a comparison of gastric analyses there has been a steady and downward trend in the gastric acidity, associated with states of exhaustion different from those to which we are quite accustomed. If we take into consideration the diseases in which a low acidity or achlorhydria is found, as in gallbladder disease, carcinoma or pernicious anemia, we may well question

TABLE 1.—*Gastric Analyses*

Gastric Analyses	Ewald Meals	Over 50 Cc. Stomach Contents	Over 40% Free Hydrochloric Acid	Over 60% Total Acidity	Lactic Acid	Occult Blood
460 cases 1910-1914	422 cases 91.7%	219 cases 47.6%	210 cases 45.7%	244 cases 53.0%	6 cases 1.3%	143 cases 31.1%
400 cases 1920-1928	360 cases 90.0%	172 cases 43.0%	99 cases 24.8%	69 cases 17.3%	30 cases 7.5%	26 cases 6.5%

whether such observations are significant of a general lowered metabolism of the body or are indicative of some future complication.

With due consideration of the present evaluation, we may present a comparative series of gastric analyses, not used here as diagnostic measures, but merely to point out the difference over a period of eighteen years. Four hundred and sixty gastric analyses were made between 1910 and 1914, a period when hyperchlorhydria was a fairly common condition in cases not necessarily associated with gastric complaints. Our cases were taken at random without any selection as to the type, in order to obtain, if possible, a cross-section of the observations in this field during that time. They are merely a part of the routine diagnostic measures used at that time, and made on patients with various complaints. In this series 91.7 per cent of the procedures were Ewald meals; 88.9 per cent were withdrawn within one hour and 47.16 per cent averaged more than 50 cc. in amount; 45.7 per cent showed free hydrochloric acid over 40 per cent, and 53 per cent of these have more



Comparative observations: shaded columns, 1910-1914 cases; solid black, 1920-1928 cases.

than 60 per cent total acidity, with blood positive in 31.1 per cent of the number by the benzidine test, and 8.47 per cent by microscopic observation. All tests were made in the same laboratory and the data are presented merely to show the uniformity of conditions under which the work was done.

The four year period of war brought about marked changes in habits of living, entailing great physical exhaustion, exposure and food deficiencies. Closely following this, when the nation's resistance was at its lowest ebb, the virulent and devastating influenza epidemic of 1918 occurred. This is not a suitable period from which to draw any observations, but a similar number of gastric analyses, made between 1920 and 1928, may be considered. Most of the analyses were made in the same laboratory by one or two technicians, and under conditions comparable to the previous series. Here 90 per cent were Ewald meals. The average time of withdrawal was one hour, and in 43 per cent of cases 50 cc. of stomach contents was obtained, with free hydrochloric acid in only 24.8 per cent of the cases over 40 per cent, and in only 17.3 per cent a total acidity of more than 60 per cent. In 6.5 per cent blood was positive to benzidine, and in 7.5 per cent lactic acid was present.

Should not the reduction of 20.9 per cent in free hydrochloric acid and of 35.8 per cent in the total gastric acidity together with the appearance of 7.5 per cent of cases showing lactic acid be looked on as suggestive of at least a part of the general exhaustive state?

Speculation as to the cause of this downward trend of gastric acidity has unlimited possibilities.

In 59 per cent of the cases from 1921 to 1928 the icteric index was within normal limits. This aids in ruling out the possibility of bilirubin anemia as a cause of these depressed states.

Associated with this reduction in the gastric acidity there was a similar downward trend in the pulse and

blood pressure, and also a slight secondary anemia. Should such observations be looked on as a result of primary hypothyroidism or as a manifestation of exhaustion of the whole organism, shared by the thyroid?

At this point let us consider two other causes for body exhaustion. Since the advent of prohibition there has followed in its wake an ever increasing consumption of "bootleg" whisky, which in some instances leaves the body depleted beyond restitution and yearly takes its toll of human lives.

TABLE 2.—*Comparative Histories*

Diagnosis	Complaint "Lack of Pep"	History of Infection	Cases	%	Gall-bladder Disease	Susceptibility to Cold	Constipation
Hypothyroidism 140 cases	50 cases 35.7%	Influenza....	62	44.2	25 cases 17.8%	62 cases 44.3%	83 cases 59.3%
		Pneumonia..	24	17.0			
		Tonsillitis...	42	30.0			
		Tuberculosis	5	3.5			
		Typhoid.....	30	21.4			
Neuroses 22 cases	10 cases 45.5%	Influenza....	18	81.8	.....	20 cases 90.9%	10 cases 45.5%
		Pneumonia..	4	18.0			
		Tonsillitis...	1	4.5			
		Tuberculosis	3	13.6			
Exhaustion states	110 cases 100%	Influenza....	67	60.9	12 cases 10.9%	37 cases 33.6%	36 cases 32.7%
		Pneumonia..	4	21.8			
		Tonsillitis...	41	37.2			
		Tuberculosis	10	9.9			
		Typhoid.....	19	17.2			

In the series of 110 selected cases of exhaustion, among the men 48.4 per cent were users of alcohol and 51 per cent were users of tobacco. This is also true of a goodly percentage of women, a rather high consumption of bad alcohol for a prohibition country.

Another ever increasing menace, particularly to city dwellers, which likewise takes its yearly toll of lives is carbon monoxide. It is well known that short exposure to high concentrations of carbon monoxide is fatal. Long exposure to low concentrations, while not fatal, is poisonous and produces the previously outlined symptoms of the exhaustive state. It is interesting to know that authorities in the United States have demonstrated a concentration of 0.620 part of carbon monoxide per 10,000 cc. of air at street levels, in busy sections of cities of 500,000 population and over.

When one considers these and other less obvious conditions, such as the more sedentary habits of life, greater emotional and nervous strain, the eating of highly refined and seasoned foods, and the lack of sufficient fresh air and sunshine, it is apparent that the resistance to prevailing infections is unquestionably lowered. With the rush of life as lived in America today could not one or all of these conditions produce an exhaustive state with "loss of pep," derived from a depletion of the individual as a whole, rather than from the exhaustion of one endocrine gland?

We do not wish to infer that there are not states of hypothyroidism or endocrine dysfunction that cause exhaustion, but we feel that not all cases with low metabolic rates are primarily endocrine in origin.

In recent years the basal metabolic rate has been invaluable in indicating relative physical fitness or basic level of vital activity of the physical power of the individual. Unfortunately, however, and sometimes incorrectly, it has been used as evidence for or against disorders of glands of internal secretion, most commonly the thyroid. No laboratory test is infallible and absolute; such tests at best are only an aid to the final diagnostic conclusion. This being reached, we should treat the individual, for the patient has come to the physician for correction of his general condition and not for the adjustment of his metabolism. A —15 per cent basal metabolic rate alone does not establish the diagnosis of primary hypothyroidism. We know that some apparently normal persons have low metabolism without signs or symptoms of endocrine dysfunction clinically.

In 140 cases between 1920 and 1928 in which the diagnosis of hypothyroidism was made, only 48 per cent showed a metabolism of between —10 per cent and —20 per cent, and only 10 per cent showed a metabolism of more than —20 per cent, yet these patients had sufficient physical evidence and symptoms to justify the diagnosis of hypothyroidism. From this series one can state that 42.2 per cent of cases diagnosed hypothyroidism were within the range of normal metabolism and the diagnosis was made more on the signs and symptoms than on the metabolic rate. In only 35.7 per cent of this series of cases of hypothyroidism was there a complaint of exhaustion or "loss of pep."

In the series of 110 cases of exhaustion the chief complaint was "lack of pep" or exhaustion, and these may be compared with the group of 140 selected cases of hypothyroidism and twenty-two cases of definite neuroses. They are presented in the tables under the headings of comparative histories and of physical and laboratory observations. The percentages given are based on the total figures of each separate group.

In the group classified as exhaustion states the chief complaint in 100 per cent of the cases was "loss of pep" or exhaustion, and these cases were equally divided between males and females. In only 35.7 per cent of the cases of hypothyroidism was the complaint "loss of pep," and the ratio among these cases of males to females was 1:7.

There were 4.4 per cent fewer cases of basal metabolic rates of —10 per cent to —20 per cent, and 6.4 per cent fewer cases of basal metabolic rates of —20 per cent in the exhaustive states than in the hypothyroid cases.

There are 13.8 per cent more cases of exhaustion presenting palpable or enlarged thyroids than true hypothyroidism. This thyroid enlargement may be interpreted as an effort on the part of the endocrine system to adjust its secretion to the overtaxation of the organism as a whole.

TABLE 3.—*Comparative Physical Observations*

Diagnosis	Palpable Thyroids	Weight Gain	Dry Skin	Pain and Stiffness of Joints	Depression	Good Sleep
Hypothyroidism 140 cases	10 cases 7.1%	92 cases 65.7%	69 cases 49.3%	74 cases 52.9%	89 cases 63.6%	97 cases 69.3%
Neuroses 22 cases	1 case 4.5%	1 case 4.5%	2 cases 9.1%	10 cases 45.5%	3 cases 13.6%	59 cases 26.8%
Exhaustion states 110 cases	23 cases 20.9%	25 cases 22.7%	27 cases 24.5%	41 cases 37.3%	21 cases 19.1%	70 cases 63.6%

In the hypothyroid cases there were 43 per cent more cases of weight gain, and 19.8 per cent of these persons had definite dorsal padding over the hands and feet and girdle padding about the hips. Associated with this were 24.7 per cent more cases of dry thick skin than in the exhaustive states.

In the exhaustion states 21.7 per cent more patients had a blood pressure over 112 systolic and 70 diastolic than the hypothyroid. In gastric secretion there was a definite increased secretion of acid in the exhaustive

states over the hypothyroid; namely, free hydrochloric acid, 5.3 per cent and total acidity 6.6 per cent.

As regards the part infection has played in the exhaustive states, there were 16.7 per cent more patients with a history of one or more attacks of influenza, 4.8 per cent with more pneumonia, 7.2 per cent more with attacks of tonsillitis and 10.6 per cent with less susceptibility to colds than among the hypothyroid group.

As a result of the pathologic changes in the tissues in hypothyroidism, one of the chief complaints is stiffness of the joints and extremities; in this series a complaint of joint pains was recorded among 49.1 per cent more cases of hypothyroidism than among the cases of exhaustion.

Likewise, a rather prominent complaint in hypothyroidism is constipation and indigestion, and in this series there were 26.5 per cent more complaints of constipation and 12.4 per cent more complaints of indigestion than among the exhaustive states.

One of the striking features of hypothyroidism is the sluggishness of the patient, and especially the tendency to depression. There were 44.5 per cent more cases of depression and 9.2 per cent more nervous manifestations shown among the hypothyroid cases than among those presenting exhaustive states.

TABLE 4.—*Comparative Laboratory Observations*

Diagnosis	Basal Metabolic Rate		Blood Pressure 115 Systolic and 70 Diastolic or Below	Gastric Analyses		Hemoglobin (Sahli)
	−10% to −20%	Over −20%				
Hypothyroidism 140 cases...	68 cases 48.6%	14 cases 10%	68 cases 48.6%	Over 40% free HCl 22 cases 15.6%	Over 60% total acidity 24 cases 17.1%	Under 80% 49 cases 35%
Neuroses 22 cases.....	6 cases 27.3%	.....	14 cases 63.6%	Over 40% free HCl 5 cases 22.7%	Over 60% total acidity 8 cases 36.4%	Under 80% 1 case 4.5%
Exhaustion states.....	48 cases 43.6%	4 cases 3.6%	29 cases 26.4%	Over 40% free HCl 23 cases 20.9%	Over 60% total acidity 26 cases 23.6%	Under 80% 36 cases 32.7%

CONCLUSION

The cases of well defined neuroses are used as a comparison with glandular deficiencies to show the contrast between these types and to aid in differentiation of the exhaustive states from the endocrinopathies and the neuroses. With this idea in mind and in view of the contrasting results presented in these cases, we draw the following deductions:

1. During the periods from 1910 to 1914 and from 1919 to 1928, there has been a gradual reduction in both total and free acids of the stomach to almost 50 per cent of its previous high level.

2. There have arisen since the World War noxious substances, with the advent of automobiles and prohibition, which are productive of an ever increasing exhaustion of the body as a whole.

3. There are cases of exhaustion in which there is lowered metabolism and blood pressure, with slight secondary anemia and slow pulse, which are an expression of an exhaustion state of the whole individual and not of any specific endocrine dysfunction.

4. These exhaustive states arise from two main sources: (*a*) infections in the respiratory and biliary tracts, and (*b*) nervous and mental strains. Unless the etiologic factor producing this condition is removed, all manner of endocrine therapy is of no avail.

5. Endocrine therapy produces the best results when given with discrimination to endocrine dysfunctions, and meticulous care should be taken to ascertain if possible the etiologic factors in each individual case.

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ABSTRACT OF DISCUSSION

DR. GARNETT CHENEY, San Francisco: This is an interesting and also a troublesome group of cases. It should be considered in the same light as the group of cases we heard discussed under the term of "essential hypertension," only in the opposite respect; that is, these patients have a developmental or hereditary predisposition to their exhaustion states with their hypotension, which may well be set off by certain toxic conditions or perhaps by certain chronic infections. Most of these patients in an exhaustion state, or "pepless" individuals, have had the condition for some years. Many of the patients followed have had their exhaustion state, or periods thereof, and their hypotension before the World War, before the influenza epidemics, when people were using good liquor instead of bad liquor and before automobile carbon monoxide gases were disseminated as freely as they now are. That, of course, is not true in all cases, but it certainly is true in some which have been watched for some years. I am unable to follow the conclusions drawn from the figures on gastric analysis. In the first place the age group must play some part in this change in figures. One would feel that the age group before the war was younger, and the age group following the war was older, as the figures show the characteristic change found in older people; this is, that acidity tends to be lower. Unless we analyze the age group and incidence of other conditions, I do not believe we can definitely say that gastric hydrochloric acid is diminishing because of the present stress and strain of life. Also, a more standardized method of gastric analysis would give more uniform results. If we compare large series of cases, before and since the war, we do not find this definite difference in the presence of lactic acid. Lactic acid is present only with stasis or cancer. It is hard to see where that plays any part. Concerning the treatment of these cases, certainly this group should be separated from the real endocrine group, particularly the hypothyroid groups. One of the important points is this: Giving thyroid to these patients does not help them; in fact it makes some of them worse, either in small or in large doses. If one gives them, during the period of their exhaustion state, ephedrine or some drug to raise the blood pressure, they notice a distinct benefit. It seems that many of their symptoms are centered about their low blood pressure. When the blood pressure is higher, they feel better and the symptoms diminish or disappear.

DR. GEORGE DOCK, Pasadena, Calif.: I should like to call attention to two or three things connected with exhaustion states as distinguished from endocrine cases which can be recognized and seem to be of importance. These cases are not uncommon. In addition to the complications that have been mentioned, I should like to point out that some of these cases in a few years will turn out to be Addison's disease, so that all people with these symptoms should be examined carefully in the beginning with reference to that possibility. Some of them within two or three years will have exophthalmic goiter. One can suspect it in the beginning from the exhaustion, but it will not be possible to confirm it from the basal metabolism or any of the innumerable symptoms. But if one follows the patients, one will find that, in spite of careful treatment, in two or three years some of them will have marked cases of exophthalmic goiter and will have come to operation. Some of them in two or three years will have pernicious anemia. They will not have it in the beginning. One can examine their blood as thoroughly as one pleases and can make all other tests. One can treat them for two or three years and then gradually, unless liver treatment has been given, they will

turn out to have pernicious anemia with typical blood pictures, and so on. Some will have myasthenia gravis, an extremely important thing to bear in mind. Finally, I would mention encephalitis. Last winter we had in southern California a severe pandemic of influenza. It did not cause as much bronchopneumonia as during the war, but it did cause a fatal pneumonia in many cases, and more mental and physical depression. Dr. Elder, who had experience with influenza in army camps, suggested to me, at first rather jokingly, that the neurasthenia that people got after influenza might be the result of encephalitis. After following up cases from last fall down to the present time I have been inclined to think that many of the patients have had mild attacks of encephalitis. In regard to treatment, wherever the hydrochloric acid is low, these patients do well on hydrochloric acid in full doses, that is up to 60 minims (4 cc.) after each meal. The patients with probable myasthenia frequently do remarkably well on that. Another thing that is used in these cases is nux vomica in large doses. I have been treating my patients with doses beginning with 15 minims (1 cc.) and increasing up to 60 or 80 minims (4 or 5 cc.) three times a day. It is extraordinary to see how people can take up to 80 minims three times a day without getting spasm of the neck or wire-edged nerves or any of those things we used to think were so dangerous.

DR. N. S. DAVIS III, Chicago: Dr. Arthur I. Kendall of Northwestern University Medical School has found in certain asthenic conditions an excessive quantity of gas bacilli in the stools, and in cultivating those organisms has been able to get a substance in the culture medium that gives a distinct histamine reaction. In the treatment of cases of that sort, one should put the patients on a low carbohydrate diet and give acidophilus milk or lactic acid, or any buttermilk; they improve quickly. Their blood pressure, which is characteristically low, goes up to a low normal or to an actual normal. I have seen some such cases in which the systolic blood pressure was in the nineties and even in the forties and fifties. Then there is another type, in which the hypochlorhydria is associated with an endocrinuria. In those cases we can get good results by giving hydrochloric acid milk, that is, a mixture of hydrochloric acid and milk, and it causes an almost immediate relief of the endocrinuria. In the gas bacillus type one gives a low carbohydrate diet and in this type of hypochlorhydria these patients are unusually susceptible to certain types of meat and fowl, particularly those that have been in storage. If they eat much cold storage chicken, for instance, half a chicken, they develop endocrinuria. There is another piece of work that has been done at the University of Chicago. A man has isolated a new suprarenal extract which is active when given by mouth and causes a distinct increase in the metabolic rate of these individuals and also an increased ability to do work, causing them to respond to effort in the same manner that a normal individual does, whereas before the administration of this extract by mouth they have had a deficient oxygen reaction.

DR. RUSSELL L. CECIL, New York: Not enough stress has been placed on pernicious anemia or secondary anemia, especially in women. In my experience this is due more frequently to excessive menstruation or constipation than to any other two factors.

DR. W. O. JOHNSON, Louisville, Ky.: These exhaustion states were called to our attention because they occurred in great part in a group of successful people who had been apparently perfectly well and were approaching 40 or over before the condition arose. After the onset of the disability the condition has progressed rapidly. In contrast to this group we presented the series of neuroses which we believe occur in constitutionally inferior individuals, to show that we are dealing with individuals who have been apparently healthy but have been running their engines at high speed against brakes. The age incidence of the series of gastric analysis is important. The average age of these groups was about 40 years. The point that Dr. Cheney brought out concerning thyroid extract is a most important one. We find that a large group of these patients have been taking some form of thyroid medication for a long time without satisfactory improvement. The etiologic agent producing the disease is still present. These cases are most discouraging. I think Dr. Dock has made some excellent suggestions in regard to the ultimate outcome of some of these conditions. In retrospect, we find such conditions present in exophthalmic goiter and encephalitis. but will not such grave complications be prevented by the eradication of the underlying etiologic factors? The use of nux vomica together with a general upbuilding regimen of diet and rest, and correction of the cause of the condition, has been satisfactory in our experience. Dr. Davis reemphasized the point we wish to make: Remove the etiologic factor and more satisfactory results are obtained. In reply to Dr. Cecil, we found that the average hemoglobin of the series was from 10 to 15 per cent lower than the average low normal of 85 per cent.

PLASTIC SURGERY OF THE RENAL PELVIS AND URETER*

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The desire to conserve the diseased kidney, if possible, has always decisively influenced my surgical procedure. It is self-evident that I have sought and invented technical possibilities which should further this endeavor. Therefore, I hope I will not be thought immodest, and that it will not be taken as a sign of a one-sided technical conception, if I offer in this paper the demonstration of those methods which I use in the various diseases of the upper urinary tract in order to conserve the kidney. I hope that I shall be able to sketch the technical indications for such an operation.

I have recently had the opportunity in New York to express my views of the pathologic physiology of urinary obstruction. These, coupled with an exact anatomic diagnosis and a wide exposure of the operative field, are necessary for the technical execution of the operation.

I will avail myself of this opportunity to discuss the personal methods that I use in resection of the kidney and the relief of obstruction in the upper urinary tract from the ureteropelvic junction to the ureteral orifice.

Double kidney, with and without complete double ureter, often gives rise to severe symptoms. Should these be associated with an ordinary disease of the kidney, such as stone or tuberculosis, the operative procedure is predetermined. It is quite otherwise with those cases in which anomalies of structure coupled with infection are the basis of such symptoms. These cases are the proper field for plastic operations in double kidney.

The operation can be executed on either the ureter or the kidney pelvis, or especially in the case of bifid ureter it may consist of resection of part of the kidney with its respective ureter. In the case of double ureter I have implanted one ureter either into the kidney pelvis or into the other ureter. It is always the ureter of the diseased half of the kidney which is resected and implanted.

The operation develops in the following manner:

1. Exact preparation of the hilum and the ureter.
2. The amputation of the ureter at the place of origin, and in such a manner so that a little redundant tissue is present to prevent the formation of a stricture.
3. Closure of the amputation point.
4. Resection of the redundant ureter.
5. Implantation into the kidney pelvis or end-to-side implantation into the retained ureter above the site of crossing.
6. Drainage by nephrostomy for prevention of tension on the suture line.

* Read before the Section on Urology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

At the kidney pelvis the anastomosis of the double pelves may be done either with or without the resection of the extra ureter. The resection of the ureter is the more certain procedure. Finally the resection of the diseased half of the kidney may be carried out. This in the case of complete double kidney is the operation of choice. If, however, it is a double kidney, with bifid ureter, resection is necessary when the ureter is diseased. Vice versa, implantation can be done in those cases in which resection is accompanied by serious anatomic difficulties.

A resection of the kidney should always be done in cases of double kidney when the extent of pathologic processes allows. This is almost always when the smaller half, with one calix, is diseased. In the case of disease of the larger half, it is only of advantage in bilateral kidney disease to retain the smaller part, and then only in case a good function has been established by diagnostic test. Otherwise the double kidney is to be extirpated.

If one has decided to do a kidney resection the hilum must be most carefully prepared and the main branches of the vessels of the kidney must be isolated. Sometimes it is impossible to carry out the resection when the vessels first branch deeply into the hilum; that is to say, in the kidney itself. If one lifts up the edge of the kidney with a delicate blunt retractor, it is sometimes also possible in these cases of intrarenal hilum to isolate the vessels. When the vessels of the kidney are isolated, it is easy to determine which vessels supply that part which is to be resected. These vessels are clamped and ligated. One now decapsulates the part of the kidney which is to be resected and in such fashion that the incision in the capsule begins at the hilum and is continued vertically over the pole of that portion to be resected. If one then lifts up the anterior and posterior leaves of the stripped off capsule, one sees the sharp demarcation of the portion that has been devascularized by previously clamped vessels. This line of demarcation is practically identical with the gross line of embryonal formation of the kidney into its two parts. It is interesting that this line is usually never exactly horizontal but is higher on one side than the other, so that one part of the kidney fits the other like a cap, either above or below.

This relation is important for the execution of the third stage of the operation. This is the wedge-shaped resection of the parenchyma of the kidney, which extends into the hilum at the point of the wedge. One is most careful at this point not to injure the vessels and not to open the neighboring calix of the retained portion of the kidney. The pyelogram orientates one in advance to the relationship of the calices of the respective halves of the kidney. When the resection has been done, which usually is bloodless, the resected half is attached only to the ureter and is drawn out of the operative field. Now follows the ligation of possible small bleeding vessels with fine clamps. The two leaves of capsule are now brought together so that the line of ablation is completely covered, the free edges of the capsule leaves being placed in the wedge formed by resection and the capsule leaves sewed together and, by two or three through and through sutures, closely approximated.

This suture is so placed that it begins externally at the middle of one leaf of capsule, goes down to the base of the leaf near the boundary of the hilum, and is then drawn out through the middle of the other leaf. When this suture is drawn tight, one gets a good coaptation of the leaves. A few superficial sutures complete the line. To complete the operation, the ureter of the resected portion is divided at its junction with the other ureter and the line closed with several fine sutures. In genuine double kidney the ureter is ablated in the general region of the bladder, but if diseased it must be completely resected at its entrance into the bladder.

Also in resection of the kidney for other causes I lay the greatest stress on thorough preparation of the hilum and the exposure and ligation of the vessels to the part to be resected. In these cases the open calices must be especially well sutured. In none of my cases have I experienced either a secondary hemorrhage or a permanent urinary fistula. In all cases there was healing without complications.

The second group of plastic operations concerns itself with cases of urinary obstruction. The obstruction must be either radically removed or circumvented. In some of these disorders, such as in accessory arteries and kinks, one can get along without a plastic operation. In the remaining cases the relief of the obstruction is associated with either the transverse or the lateral incision of the ureter.

Topographically, three classes of cases are differentiated, depending on the location of the obstructing lesion: (1) cases at the ureteropelvic junction; (2) cases along the course of the ureter, and (3) cases in the intramural portion of the ureter, and at the opening into the bladder.

The cases at the ureteropelvic junction again fall into two groups: those which have an anatomic basis for obstruction, and those which have a functional basis, i. e., mechanical or dynamic. If the anatomic basis can be definitely determined, it can be relieved. If one determines the presence of a stricture close to the ureteropelvic junction, the stricture should be resected and the ureter implanted in the pelvis.

I carry out the implantation in the following manner: A 12 to 14 rubber catheter is put in the ureter for from 2 to 3 inches and fixed by a few fine sutures. The point of ablation of the strictured area of the ureter at the ureteropelvic junction is then widened and, with long thin curved forceps, the catheter is drawn through the lowest calix and the lowest portion of the parenchyma of the kidney. The catheter is fixed here with a suture in such a position that the catheter enters the kidney pelvis for 1 inch. Two lateral openings are previously made in that portion of the catheter which is to lie in the kidney pelvis, to insure perfect drainage. In such a position the urine can flow both down the ureter and out through the catheter. The pelvis is then sewed to the ureter in the form of a cuff, and the little remaining open pelvis closed with a few sutures. With the fixation of the catheter to the kidney capsule, and with good drainage, there is firm healing of the ureter. This method of implantation absolutely prevents the formation of a stricture. I have been successful repeatedly by this method of implantation in saving kidneys when the ureter had been injured by a former operation.

In congenitally improper exit of the ureter from the pelvis, I excise the part by a circular incision, close up the pelvis, and reimplant the ureter in correct position lower down. Only rarely do I attempt the resection of part of the pelvis or a plication of the pelvis as a palliative operation, because these procedures are unphysiologic in that they disturb the mechanical func-

tion of the pelvis. I feel that the goal of the operation is not the diminution in size of the sac but the relief of the increased intrarenal pressure, by which the function of the kidney may be maintained.

For the same reason, I do not do implantation of the ureter in the case of accessory vessels, because I fear the disturbance of function which is caused by cutting across the nerves. This last can cause the relief afforded by operation to be illusory.

If the radical removal of the obstructing cause is not practicable, as a palliative operation ureteropyeloneostomy can be done. For this I use an original method which is allied to the Finney gastroduodenostomy and which has given me excellent operative and postoperative results. This consists in drawing the free part of the ureter to the lowermost portion of the kidney pelvis and fixing it side-to-side with a few sutures. A horseshoe incision is then made with a scalpel, which begins on the pelvis at the lower angle of this fixation line and continues on the pelvis till the ureter opening is seen. The incision is then continued with fine scissors on the ureter below the fixation line, parallel with the first. The two inner edges of the wound are now brought together with a fine suture and, with the closure of the outer layer, the ureteropyeloneostomy is completed. An exact occlusion of the corners of the suture line is of great importance. For a secondary anterior line of sutures there is more than sufficient tissue by which the pelvis is drawn over the suture line. Here, as in all cases of plastic operations on the pelvis, I consider the placing of a nephrostomy drain as indispensable.

There are cases in which one must accept a functional, i. e., a dynamic, cause for the obstruction at the kidney pelvis. This is a disturbance of innervation of the nature of a spastic contraction. The cutting of the circular muscle fibers at the ureteropelvic junction is the method I pursue in these cases. This disorder is not rare, and is analogous to cardiospasm or pylorospasm. In these cases one can demonstrate at operation a marked tendency to muscular contraction of the ureter.

The operation is so performed that one opens the pelvis with a small incision and then passes graduated bougies down the ureter to the limit of distention. At this point one can notice a distinct narrowing at the site of the sphincter muscle. This is cut through and then closed with two or three transverse sutures.

In order to give a picture of the frequency and the possibilities of the modification of the single types of operation, I will here give a synopsis of statistics which I prepared for my New York paper. It will be of interest to know the results of my fundamental principles applied in clinical practice. For this purpose I have collected all the cases treated in two years in my department, totaling eighty operations for renal obstruction. In 41 per cent I had to remove the kidney as the obstruction was complete. For the conservative treatment, forty-seven cases, or 59 per cent, were left. In twenty-three cases, no mechanical obstruction could be found. In 27 per cent of my material the obstruction was of neurogenic origin. Of these cases, in twelve, that is, in more than a half, nephrectomy had to be done. Fenger's operation was performed ten times. Once this operation was combined with pyeloplication.

Congenital abnormalities were found in twenty cases, or 25 per cent. Among these three times abnormal insertion, twice hypoplastic kidney and fifteen times accessory vessels were found. Among these cases I did a nephrectomy ten times, which means 50 per cent of the cases. Once a neo-implantation of the ureter, and nine times the dissection of an accessory vessel was performed. In thirty-seven cases I dealt with strictures of the ureteropelvic junction. In eleven cases, about 30 per cent, the nephrectomy was done. In nine cases I did a ureteropyeloneostomy; in eleven cases the plastic operation of Fenger; twice, neo-implantation, and in four cases the surgical dilation of the ureter. Among the forty-seven mentioned cases of conservative surgery a secondary nephrectomy had to be performed three times, about 7 per cent of the cases. There was no loss of life in any of these cases.

I have operated in cases in which there was a dilatation of an isolated calix. Such isolated dilatations originate after passage of a stone and from stricture at the neck of the calix, and can give rise to marked symptoms. In these cases I first mechanically dilate the neck of the calix from the pelvis to from 14 to 16 F., with straight sounds, and then place a rubber catheter through the calix outward as a nephrostomy. The catheter is allowed to remain in place for fourteen days.

In the second group, strictures in the course of the ureter, when nonoperative measures are not successful, I am accustomed to expose the stricture and divide it. Drainage is provided in three ways according to the location of the stricture. A catheter in the ureter is drawn out (*a*) through a nephrostomy wound, (*b*) by a T-tube catheter at the side of the ureter, as in drainage of the bile ducts in the manner of Kehr, or (*c*) by a catheter passed down into the bladder which can later be removed by cystoscopy or, in the case of the female, drawn through the urethra at the time of operation. This drainage keeps the ureter dilated at the site of stricture until the defect is replaced by regenerative and not by scar tissue.

I have never done resection of a stricture with end-to-side anastomosis or circular suture, for I do not believe that these methods can give worth-while end-results, because of secondary stricture formation.

Finally, I come to the third and last group, to the not infrequent strictures in the intramural portion and to narrowing of the ureteral orifice. For these I have worked out a simple and efficient operative procedure which I can highly recommend.

The bladder is opened by suprapubic incision and a Reverdin needle is introduced in the mouth of the ureter and carried up the ureter for a distance of from 1 to 1½ inches and then thrust through the wall of the ureter and bladder. Next, a heavier suture is drawn through the same path, but retrograde and so fastened that the tied-off tissue is devitalized and must disintegrate. The ends of the suture in female patients are drawn through the urethra, in male patients left fastened through a small suprapubic drain. The sutures spontaneously come away in seven or eight days. In such manner, the result is a beautiful slit-shaped, good-functioning ureteral orifice. The method recommends itself, since by a simple and easily controllable technic it radically extirpates the stricture and does not cause any interference with the function of the ureteral orifice.

With few misadventures, my experience in plastic surgery in urology has been a source of great pleasure and satisfaction to me, and my conviction grows more and more certain that conservative surgery in the field described has justified its existence.

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FACTORS INFLUENCING THE OPERATIVE PROCEDURE IN HYDRONEPHROSIS *

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All surgery should be constructive, wherever possible and safe, rather than destructive. This is especially true when the disease at hand involves a parenchymatous organ, such as the kidney. One can never foretell what bodily stresses or storms may be ahead of any individual patient; and though the histories of multitudes of patients from whom one kidney has been removed show conclusively that normal life is in no way hampered thereby, nevertheless if such an individual, at a later period, is so unfortunate as to need some surgical procedure on the single remaining kidney, the end-results of such a secondary operation are well known to be bad. Granting these facts, it follows that even if a kidney is not entirely perfect with regard to its functional capacity, it should nevertheless be conserved if it is not so grossly infected or otherwise impaired as to be either a threat or an actual hindrance to the future normal life of the patient.

In my opinion entirely too many nephrectomies have been done in the past, and, in a measure, are still being done, in the main because of a lack of familiarity with the possibilities for conservation offered by plastic operations, or a lack of knowledge of their technic.

In general those renal conditions which are most frequently amenable to plastic surgery are the ones in which stasis of urine within the kidney pelvis or ureter has taken place. Stasis is a well known cause of secondary infection, or the formation of stone. But even if the latter two conditions do not supervene, hydronephrosis with its attendant renal pain is always a sequel. In many instances anomalous development of the kidney, together with its blood supply, is the primary cause of the stasis, and such anomalies have long been known to occur with greater frequency in the urinary tract than in any other of the bodily systems.

It is not my purpose to discuss the relation of plastic surgical operations to all of the many anomalous conditions of the kidney which are known to occur, but to confine my remarks to those cases in which a hydronephrosis is found associated with an abnormality of the renal blood supply. The clinical picture presented by such patients is often striking. Also when the underlying difficulty is clearly understood, the results of plastic operation are often brilliant. Furthermore, it is becoming increasingly evident that such cases are of quite common occurrence.

A brief clinical history of a typical case will serve to illustrate this group of hydronephroses:

A girl, aged 14, entered the hospital in March, 1922, because of pain in the left side. The family history and past history were unimportant. The present symptoms began three years before admission and consisted of an intermittent dull ache in the left loin radiating through to the abdomen. The pain was usually dull but there also occurred acute exacerbations, with tenderness of the abdomen and of the costovertebral angle and lumbar region. No mass had been noted; lying on the right side aggravated the pain. During the past year, attacks occurred about once a week, accompanied by nausea and vomiting lasting about twenty-four hours. Seven months before entrance the patient had been operated on elsewhere for questionable "diverticulitis." No diverticulum was found, but the appendix was removed. There had never been any vesical or rectal symptoms. Recently the attacks had grown more severe and the vomiting had lasted longer.

Physical examination was normal except for pain and tenderness on palpation in the region of the left kidney. The urine was normal, as was also the blood. Roentgenologic studies of the gastro-intestinal tract were normal. By cystoscopic examination the bladder was normal and each ureter was free for the passage of a catheter. A pyelogram showed hydronephrosis of the left kidney with marked blunting of the calices. Roentgen examination gave no evidence of stone.

At operation a hydronephrosis was found associated with an aberrant artery lying in contact with the ureter at its junction with the pelvis and anterior to it. After passing the ureter, this artery entered the lower pole of the kidney. It was accompanied by two veins of considerable size. Examination of the hilum of the kidney failed to demonstrate any normal renal artery. The upper pole of the organ was not exposed, but doubtless this portion was also supplied by a similar polar artery. After thorough mobilization of the dilated pelvis, the ureter was cut away and the point of its insertion closed by a few stitches of fine catgut. A point on the pelvis well away from the vessel was then chosen, a linear incision made into its wall, and to this the upper end of the ureter was anastomosed. Following operation there was almost no leaking of urine, and convalescence was entirely afebrile. Five months later the patient reported that she was entirely well. Renal function showed a better output of dye from the unoperated kidney than from the one on which operation had been done, but this difference was not great and the pyelographic outline of the pelvis on which the plastic operation had taken place showed about a 25 per cent diminution in size, with normal, funnel-shaped outlet. A recent report nearly seven years after operation tells that the patient has continued to be entirely well, has married, and has gone through one pregnancy without untoward event.

This is a typical history and operative result in such cases. What is the underlying pathologic physiology with regard to the etiology of the hydronephrosis? So far as anatomic facts are concerned, these anomalous polar renal vessels represent an early embryologic condition which should have become absorbed and translated into the condition of normal supply by a single artery. They are end arteries in effect, for following division of such a polar vessel the renal parenchyma supplied by it becomes necrotic before adequate collateral channels have time to form. In some cases in which the vessel is of large size, its division causes a destruction of nearly half the kidney. Such vessels, when present, are sometimes accompanied by a hydronephrotic dilatation of the renal pelvis, as in the cases I am discussing; but often, though the vessel is anomalous, the renal pelvis will be found to be of normal size and shape. It has been suggested that a congenital stricture or stenosis of the ureter is also present in these cases, but it is known today from the microscopic examination of this portion of the ureter excised at operation that this is not the case: the ureteropelvic junction is normal. Another theory considers the dilated pelvis to follow only in cases in which the kidney is abnormally movable, under which circumstance the pelvis and kidney are thought to fall over the abnormal vessel as a sling or band, thus causing angulation and stenosis of the ureter. But this idea is clearly erroneous, for when a kidney moves downward its vessels move with it, the whole descent being throughout an arc the center of whose radius is the junction of the renal artery and aorta.

Physicians are learning to appreciate more and more the results of the various studies of the dynamics of the ureter with regard to their application to clinical and pathologic phenomena. Many instances are thus explained of apparent "stricture" or vesical reflux and

* From the Urological Clinic of the Peter Bent Brigham Hospital.
* Read before the Section on Urology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

ureteral retroperistalsis. As concerns normal peristalsis of the ureter it is well known now that it begins in the pelvis of the kidney and is propagated downward to the bladder. But this peristaltic wave is not a forceful one under normal conditions, for, unless there is a marked diuresis on the part of the kidney, some of the waves fade out before the bladder is reached. It has long been known that in the experimental animal a bit of ligature laid loosely about the ureter will gradually cause a hydronephrosis above, evidently acting not as a ligature but merely as a foreign body; and quite recently this fact has been given further support by the observation of Blatt that hydronephrosis follows circular painting of the ureter with phenol (carbolic acid). So also peristalsis is easily inhibited by touching the ureter with a crystal of barium chloride. In these various ways, therefore, it has been shown that hydronephrosis can be caused experimentally by inhibition of peristalsis without any mechanical obstruction of the lumen of the ureter. In short, the ureter is composed of smooth muscle fibers the reaction of which to many forms of stimuli is well known to be a very labile one.

In view of these known facts, I would suggest for consideration that the cause of the hydronephrosis in this group of cases is to be found merely in the pulsations of the artery itself, lying in juxtaposition to the ureter and inhibiting there the normal flow of peristaltic waves. No mechanical obstruction is necessary and none is present; but the current of action set up by each arterial beat is quite sufficient to cause nervous interference in the ureter of a minor degree. Acting thus from the birth of the individual, a slowly increasing dilatation of the renal pelvis ensues. When this reaches a sufficient size, symptoms appear; and in this connection it is interesting to note that a large proportion of these patients date the onset of symptoms at some period during their second ten years of life; that is, from 10 to 20 years of age.

If these arguments are sound I would ask that the operative procedure for the relief of this type of hydronephrosis be based on the following postulates: 1. The aberrant renal artery functions as an end artery the ligation of which means, in effect, a partial nephrectomy. This is undesirable, and should rarely be done except in those instances in which the vessel is extremely small. 2. The hydronephrosis is due to partial inhibition of normal peristalsis by the arterial beat of the apposed vessel. Therefore removal of the ureter to another position on the pelvis out of contact with the vessel, and reimplantation of it in this position is the best method of relief.

As to end-results: Since my communication on this subject before this section two years ago in which ten cases were reported, six other patients have been operated on by this method. In all, convalescence was without abnormality. Of this group of sixteen cases a number have been investigated at various periods after operation, as in the instance related earlier in this paper. It has been gratifying to find that in all cases the function of the operated kidney has improved. Though as a rule this resumption of function does not go so far as to make the operated kidney again normal, it has always been found to be of such degree as to indicate that the kidney was well worth saving; nor does the pelvis after operation resume again its normal size but, as judged from pyelograms, its size is reduced to about one-half that present before operation. Pyeloscopy, however, has shown in the three instances in which it was carried out that these pelves with reimplanted ureter have an emptying time of somewhat less than four minutes, which is quite within normal limits.

A short time ago Hinman of San Francisco brought forward evidence as a result of extensive experimentation on animals that when one kidney has been crippled by being made hydronephrotic such a kidney will not resume activity again even if the hydronephrosis is relieved. The cause of this failure he ascribes to the fact that while the one kidney was hydronephrotic the other hypertrophied to compensate for the loss of functioning renal tissue. In the presence of this hypertrophied kidney, stimulus for the resumption of function by the hydronephrotic organ is lacking and such resumption does not take place even though the cause of the hydronephrosis is relieved. He terms this situation "renal counterbalance." Other workers have already failed to substantiate this suggestion of Hinman from the laboratory side, and in the clinical field the theory surely fails to be fulfilled; for in all these clinical cases in which plastic operation has been successful the kidney so treated had been easily demonstrated to have resumed its function to a considerable degree. It may well be that the theory is not applicable unless the kidney is destroyed more than was the case in this series of patients. The postoperative histories together with the functional renal tests in all of them have been so satisfactory, on the whole, as to make the value of such conservative operations abundantly evident.

URINARY OBSTRUCTION AND HYDRONEPHROSIS

RESECTION OF THE RENAL PELVIS, THE KIDNEY AND THE URETER; REPORT OF NINE CASES *

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AND
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Two years ago, before this section, Quinby [1] reported thirteen cases of hydronephrosis in which he had performed plastic operations; in seven instances the ureter had been transplanted to the dependent portion of the renal pelvis. (In 1922, with the report of three cases, Quinby [2] described his operative technic.) In the discussion that followed, hope was expressed that postoperative tests of renal function and postoperative pyelograms of the kidney operated on would be made in further cases, to eliminate the possibility of silent atrophy having occurred. Quinby's clinical results in his cases were so excellent, over periods ranging from one to eight years, that we were stimulated to the performance of plastic procedures for hydronephrosis in selected cases.

SCOPE OF PRESENT STUDY

This report is concerned with ten operative procedures performed on nine patients at the Mayo Clinic by one of us (Walters). Results of nine of the ten operations were good. In four cases, five hydro-

* From the Division of Surgery and the Section on Urology, the Mayo Clinic.

* Read before the Section on Urology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

1. Quinby, W. C.: Plastic Surgery of the Renal Pelvis, J. A. M. A. **89**: 841-844 (Sept. 10) 1927.

2. Quinby, W. C.: Hydronephrosis, Tr. Am. A. Gen.-Urin. Surg. **15**: 43-64, 1922.

nephrotic renal pelves were resected. Therefore, in one case, operation was bilateral. Four of these five resections were successful; secondary nephrectomy was necessary in the other case. In the case in which resection was bilateral, with an interval of four months between operations, results in both kidneys were excellent. This, we believe, is the first successful bilateral operation of this type that has been reported.[3] Resection of the hydronephrotic or pyonephrotic portion of a duplicated kidney was performed in three

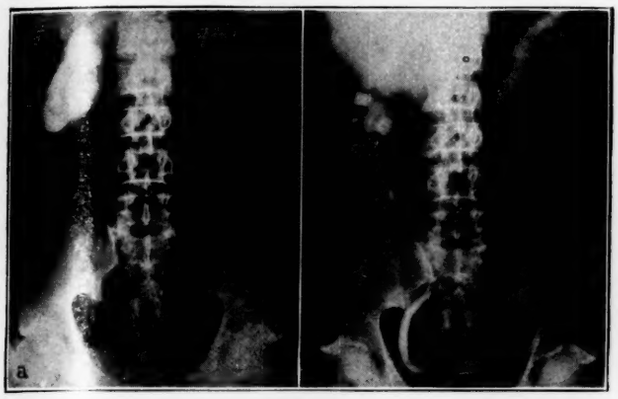

Fig. 1 (case 1).—*a*, pyelogram of right kidney showing a condition of hydronephrosis; the capacity of the pelvis was approximately 150 cc.; *b*, pyelogram of right kidney after pelvic resection. Urinary retention is not present in the pelvis or the calices.

instances. Ureteropyeloneostomy for obstruction at the ureteropelvic juncture was done in two instances. In one of these two cases, the obstruction involved a solitary kidney and was acute and complete; in the other the obstruction followed pelviolithotomy performed elsewhere.

Preoperative and postoperative cystoscopic examinations, functional tests of each kidney separately and of the two combined, and pyelograms of the kidneys and pelves operated on have been made by Braasch[4] prior to and following operation.

RESECTION OF THE RENAL PELVIS FOR HYDRONEPHROSIS

Pioneer work in the plastic surgery of the renal pelvis for hydronephrosis was done by Trendelenburg,[5] Kuster[6] and Fenger.[7] In 1891, Kuster reported a method of securing drainage of a hydronephrotic renal pelvis by severing the ureter from its abnormal pelvic attachment and anastomosing it to the dependent portion of the pelvis. This method he used in one case. Fenger[8] stated that he had performed the first successful plastic operation for valve formation producing hydronephrosis in 1892.[7] The patient was 28 years of age and had had symptoms of hydronephrosis for eight years.

Bazy[9] stated that in 1896, using Kuster's method, he performed the first successful operation of this type performed in France. This was followed by reports of success by Albarran,[10] Tuffier[11] and Delbet.[12] Quinby's report of seven cases of ureteral reimplantation forms the latest report. Our cases are summarized and abstracted as follows:

REPORT OF CASES

CASE 1.—A man, aged 54, had had repeated attacks of pyelitis since he was 28 years of age. He had been examined by various urologists, who had found advanced, bilateral hydronephrosis, and he had been given a long course of ureteral dilation and pelvic lavage without relief.

Preoperative cystoscopic examinations and pyelograms were made. The right kidney was hydronephrotic. Pus graded 2 was present in the urine from it. Return of phenolsulphonphthalein was estimated at 6 per cent and that of indigo carmine was graded 3. Urography of the right kidney revealed pelvis and calices dilated to grade 2 or 3, with a capacity of approximately 150 cc. of urine (fig. 1 *a*).

Resection of the right renal pelvis, and nephropexy, were performed, Nov. 22, 1928. The cause of the obstruction was an anomalous artery 3 mm. in diameter, which had caused cicatricial changes in the ureteral wall. The postoperative course was excellent. Cystoscopic examination, Dec. 28, 1928, revealed normal drainage of urine from the right kidney, without any retention of urine in the right renal pelvis. Indigo carmine appeared in twelve minutes, of degree graded 2. The postoperative pyelogram of the right kidney was evidence of a practically normal condition (fig. 1 *b*).

The cystoscopic examination of the left kidney made at the same time that the right kidney had been examined had revealed evidence of retention in the pelvis and pus in the urine, graded 4, with return of 10 per cent of phenolsulphonphthalein in fifteen minutes. A pyelogram had revealed a hugely dilated left renal pelvis, with evident obstruction at the ureteropelvic juncture (fig. 2). Resection of the left renal pelvis was done, April 16, 1929. The left renal pelvis was hugely dilated, and contained approximately 350 to 400 cc. of infected urine. The renal parenchyma was reduced approximately one half in size. Nephropexy and nephrostomy were done at the same time.

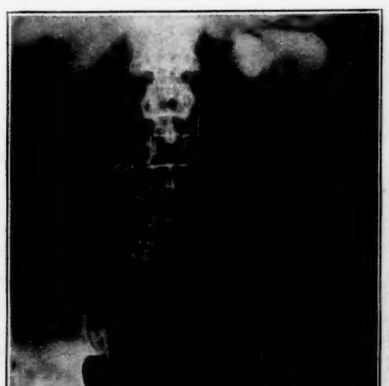

Fig. 2 (case 1).—Preoperative pyelogram of the left kidney showing marked hydronephrosis.

The patient was dismissed, May 2, in excellent condition. June 2, the left lumbar wound opened and some purulent material drained from it for two days. Cystoscopic examination, June 12, showed normal spurts of urine coming from both ureteral orifices. June 17, indigo carmine graded 2 was excreted in the urine from the kidneys. A number 10 Garceau catheter was passed into both renal pelves and there was no retention of urine in either kidney.

CASE 2.—A woman, aged 25, had had recurrent attacks of left renal colic for six months; morphine had been required for relief. Cystoscopic and pyelographic examination, June 30, 1928, revealed left hydronephrosis of moderate degree, with dilatation of the pelves and calices graded 2 to 3 with a capacity of approximately 25 cc. (fig. 3 *a*). From the left kidney, excretion of phenolsulphonphthalein was estimated at 15 per cent and the return of indigo carmine was graded 4.

3. Thomson-Walker, J. W., in discussion, Proc. Roy. Soc. Med., Surg. Sect. **7**: 59-65, 1914.
4. Braasch, W. F.: The Clinical Diagnosis of Congenital Anomaly in the Kidney and Ureter, Ann. Surg. **56**: 726-737, 1912.
5. Trendelenburg, quoted by Fenger (footnote 7) and by Bazy (footnote 9).
6. Kuster, quoted by Bazy (footnote 9) and by Fenger (footnote 7); Ein Fall von Resection des Ureter, Arch. f. klin. Chir. **44**: 852, 1892.
7. Fenger, Christian: Operation for the Relief of Valve-Formation and Stricture of the Ureter in Hydro- or Pyo-Nephrosis, J. A. M. A. **22**: 335-343 (March 10) 1894.
8. Fenger, Christian: The Collected Works of Christian Fenger, Philadelphia, W. B. Saunders Company **2**: 669, 1912.
9. Bazy, P.: Hydronéphrose, Encyclopédie française d'urologie, Paris, Octave Doin et fils **3**: 159, 1914.
10. Quoted by Young and Davis (footnote 13).
11. Tuffier, quoted by Young, H. H.; Davis, D. N., and Johnson, F. P.: Practice of Urology, Philadelphia, W. B. Saunders Company **2**, 1926.
12. Delbet, quoted by Bazy (footnote 9).

Attempts were made repeatedly to overcome the residual urine in the renal pelvis by means of ureteral dilation, but without success. There was no infection.

Resection of the extrarenal pelvis of the left kidney was performed, July 5, 1928, with reimplantation of the ureter into the dependent portion of the pelvis. There was no demonstrable obstruction at the ureteropelvic juncture. Lavage of the left renal pelvis was done subsequent to operation.

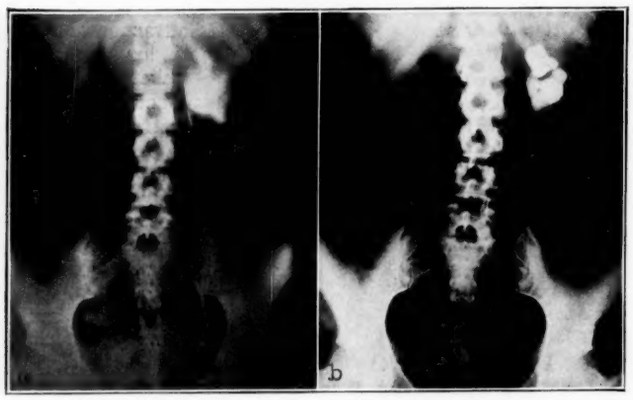

Fig. 3 (case 2).—*a*, preoperative pyelogram of left kidney; *b*, postoperative pyelogram of left kidney. The renal pelvis has become reduced in size. The calices are dilated.

Postoperative pyelography of the left kidney, August 14, revealed the pelvis to be much reduced in size, although the calices were still dilated graded 3 (fig. 3*b*). Pus graded 3 was present in the urine from the left kidney and disappeared after pelvic lavage. September 11, the patient complained of pain over the region of the right kidney. On cystoscopic examination at this time, 20 cc. of urine was drawn from the right renal pelvis and 5 cc. from the left. Shortly after this, the patient returned home in good general condition. In a letter from the patient, April 25, 1929, she reported that there was no pain over the left renal area, improvement in general condition and gain in weight. On two or three occasions she has had discomfort over the right renal area, at which time fever also has been present. Presumably intermittent obstruction, with hydronephrosis, is occurring in the right kidney and it will probably be necessary to explore this kidney in the future.

CASE 3.—A woman, aged 42, had had intermittent pain in the right renal region, with dysuria, for twenty years.

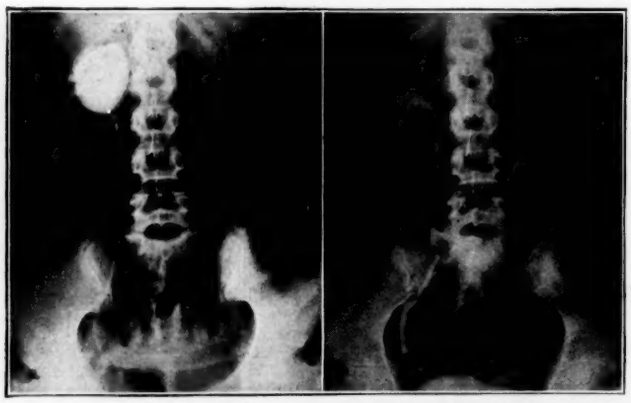

Fig. 4 (case 3).—*a*, preoperative pyelogram of hydronephrotic right renal pelvis; *b*, postoperative pyelogram of right kidney, following resection of hydronephrotic pelvis.

Cystoscopic and pyelographic examination, Aug. 25, 1928, showed definite pyelectasis on the right side (fig. 4 *a*). The function of that kidney apparently was markedly reduced, while that of the left kidney was normal. There was no infection in either kidney.

Resection of the hydronephrotic extrarenal pelvis, and nephropexy, were performed, September 11. The diameter of the pelvis, undistended, measured 5 cm. Demonstrable obstruction was not found.

Postoperative cystoscopic and pyelographic studies were made, October 2. Excretion of phenolsulphonphthalein from both kidneys in three minutes was normal. The specific gravity of the urine from both kidneys was 1.008. Urography showed that the pelvis and calices of the right kidney were almost normal (fig. 4 *b*). The patient was dismissed, October 3, in excellent condition; the incision was healed.

CASE 4.—A woman, aged 43, had had attacks of right renal colic, with chills and fever, for five years.

Cystoscopic examination, April 5, 1929, revealed excretion of indigo carmine from the right kidney graded 1, and from the left graded 4. The ureteral catheter met with an obstruction at the ureteropelvic juncture. The pyelogram showed apparent termination of the right ureter in a horizontal segment near the ureteropelvic juncture.

Resection of the hydronephrotic extrarenal pelvis was performed, April 11. The pelvis was markedly dilated and contained approximately 350 cc. of urine. The parenchyma of the kidney was reduced approximately 50 per cent in size.

Postoperative convalescence was uneventful with the exception of continuous drainage of urine from the wound. Cystoscopic examination, May 8, did not reveal urine from the right ureter. Obstruction was encountered at the right ureteropelvic juncture. Indigo carmine did not drain from the right ureter and only a faint trace of the dye appeared in the fluid discharge from the lumbar incision.

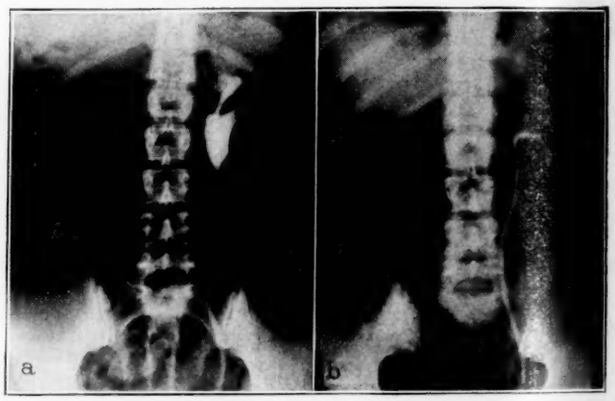

Fig. 5 (case 5).—*a*, preoperative pyelogram of hydronephrotic lower pelvis of duplicated left kidney; *b*, postoperative pyelogram of remaining segment after heminephrectomy.

Right nephrectomy was performed, May 25. There was practically complete destruction of the renal parenchyma. Inflammation about the kidney apparently was causing the postoperative ureteral obstruction. The kidney weighed only 67 Gm. The patient's convalescence following nephrectomy was excellent. She was dismissed, June 14, at which time the wound was practically healed.

TECHNIC OF RESECTION OF HYDRONEPHROTIC EXTRARENAL PELVIS

The pelvis is separated from the renal pedicle. The substance of the pelvis and upper part of the ureter is removed to within 1 cm. of the renal parenchyma, but the ureter is left attached to the lower portion of the pelvis. The pelvis is then closed, and its dependent portion is converted into a tube continuous with the ureter. Peripelvic fat is used as a patch over the line of suture.

HEMINEPHRECTOMY OR RESECTION OF A DUPLICATED KIDNEY, RENAL PELVIS AND URETER

Successful heminephrectomy or resection of a part of a kidney has been reported by Albarran, W. J. Mayo, Young and Davis,[13] and Rumple.[14] Albarran's

13. Young, H. H., and Davis, E. G.: Double Ureter and Kidney, with Calculous Pyonephrosis of One Half; Cure by Resection: The Embryology and Surgery of Double Ureter and Kidney, J. Urol. **1**: 17-57 (Feb.) 1917.

14. Quoted by Loux (footnote 15).

patient was operated on in 1905. Gayet,[14] in 1912, reported successful heminephrectomy in a case of duplicated kidney from which the patient recovered in three months. At that time, seventeen cases had been reported in the literature. According to Young and Davis, the three resections of the kidney performed by W. J. Mayo and reported by Braasch,[4] in 1912, were probably the first successful operations of the sort reported in this country. Young and Davis reported successful heminephrectomy (removal of that portion of a duplicated kidney containing a renal calculus) in 1917. At that time, they were able to find only twenty-six instances in the literature in which operation had been done for complete duplication of the renal pelvis and for different grades of ureteral duplication. In twenty of these, nephrectomy had been performed. They stated that sixteen of these double kidneys were half normal and would have afforded an opportunity for partial nephrectomy. In their paper will be found an excellent description of the embryologic development of this abnormality.

Fig. 6 (case 6).—Preoperative pyelogram of duplicated right kidney; the lower pelvis is in a state of dilatation, graded 3.

CASE 5.—A woman, aged 38, had had attacks of pain in the right side of the abdomen, with chills, fever and pyuria, since August, 1928. The urine contained pus, graded 3. Cystoscopic and pyelographic examination, November 22, revealed complete duplication of the left renal pelvis and ureter. The lower of the two pelves was dilated, graded 3, and contained infected urine, graded 4. The upper pelvis apparently was normal (fig. 5 *a*). Return of indigo carmine from the upper pelvis was graded 3; from the lower pelvis, graded 0. Indigo carmine to the normal degree of grade 4 was excreted from the right kidney.

Left heminephrectomy, in the course of which the lower, infected hydronephrotic segment of the left kidney and its pelvis was removed, was performed, December 28, and nephropexy was done on the remaining segment.

The postoperative course was uneventful. The postoperative cystoscopic examination, Jan. 15, 1929, showed a return of indigo carmine from the right kidney, graded 4, and from the remaining portion of the left kidney, graded 3. A left pyelogram, made of the remaining segment of the left kidney, was similar to that before operation and not grossly abnormal (fig. 5 *b*). At examination, May 3, the patient was found to be in excellent condition. Urine from the bladder contained pus graded 1. The patient was gaining in weight and felt well.

CASE 6.—A man, aged 43, complained of periodic dysuria with gross pyuria and hematuria that had been present since childhood. The urine contained pus graded 4; phenolsulphonphthalein 70 per cent was excreted in two hours. Blood urea was estimated 30 mg. in each 100 cc. Cystoscopic and pyelographic examination, Jan. 2, 1929, revealed complete duplication of the right renal pelvis and ureter. The pelvis and the calices of the lower pelvis were dilated to grade 3 and the upper pelvis was normal (fig. 6). Urine from the upper pelvis contained pus graded 1; from the lower pelvis, pus graded 3. The left kidney contained pus graded 2. Resection of the lower pelvis of the duplicated right kidney was performed, January 22. The lower pelvis was saccular and, when not distended, measured 5 cm. in diameter. Its ureter was dilated three times normal size. Demonstrable ureteropelvic obstruction was not present.

The postoperative course was uneventful. February 12, urine from the remaining portion of the right kidney contained pus graded 1, the incision was healed and the patient's condition was excellent.

CASE 7.—A married woman, aged 29, complained of abdominal distress for a number of years. Pyuria had been discovered on examination.

Cystoscopic and pyelographic examination, April 15, 1929, revealed complete duplication of the right renal pelvis and ureter; the lower portion appeared normal (fig. 7 *a*). The upper portion was dilated to grade 2 and the calices were obliterated (fig. 7 *b*). The ureter was dilated from grades 2 to 4 throughout. There was moderate infection. Indigo carmine was not excreted from the upper pelvis of the right kidney, but from the lower, excretion was graded 4. Indigo carmine graded 4 was excreted from the left kidney.

April 25, the atrophic, infected, upper pelvis of the right kidney, and part of the ureter, were removed. An anomalous renal artery and vein crossed both ureters. They were not divided because they appeared to be the entire blood supply of the lower portion of the kidney, which seemed normal, and was preserved.

Postoperative convalescence was normal. Postoperative cystoscopic and pyelographic examination, May 11, showed the outline of the remaining segment of the right kidney to be the same as before operation, with slight clubbing of the calices, but otherwise was negative (fig. 7 *c*). The function of the remaining segment of the right kidney was reported normal; indigo carmine to the degree of grade 4 was excreted; urinary infection was not present.

TECHNIC OF RESECTION OF THE HYDRONEPHROTIC OR PYONEPHROTIC PORTION OF A DOUBLE KIDNEY

The cuneiform type of resection, as practiced by Tuffier, was used. The cut edges of the wedge were approximated by mattress sutures of catgut tied over bits of muscle which distributed tension. A continuous suture closed the renal capsule. In one instance, in which encapsulation was not possible, a portion of the perirenal fat, serving as a patch, was sutured to the exposed portion of parenchyma.

Fig. 7 (case 7).—*a*, lower pelvis and hydro-ureter of duplicated right kidney; *b*, upper pelvis of the duplicated right kidney considerably dilated, also hydro-ureter; *c*, postoperative pyelogram of lower pelvis, after heminephrectomy.

URETEROPYELONEOSTOMY

Reviews of literature of plastic operations on the renal pelvis and ureter have been made by Adrian and Lichtenberg,[10] Kroiss,[14] Weinberg[14] and Loux.[15] The

15. Loux, N. R.: Plastic Surgery of the Kidney Pelvis and the Ureters, J. A. M. A. **65**: 1237-1243 (Oct. 9) 1915.

author last named reported successful ureterorrhaphy for strictures and stone in a case of a solitary kidney.

One of the most interesting cases of this type was reported by Bazy.[9] This patient was a boy, aged 10 years, on whom Bazy performed ureteropyeloneostomy, in 1904. Six years later, examination of the patient revealed the anastomosis to be functioning satisfactorily. A review of the literature of ureteropyeloneostomy leads one to believe that, if the anastomosis is correctly made, it will function satisfactorily. Our two cases are of unusual interest. In one case, that of a solitary kidney, complete ureteropelvic obstruction occurred. Ureteropyeloneostomy of the side-to-side type continues to function satisfactorily; ten months has elapsed since operation. In the second case an anastomosis of similar type was done to relieve an incomplete obstruction at the ureteropelvic juncture, secondary to pelviolithotomy performed elsewhere. A successful result was obtained, in spite of there being infection in the kidney operated on. A postoperative pyelogram in this case shows urine to be effectively transmitted through the anastomosis.

CASE 8.—A man, aged 35, had had left nephrectomy for stone performed elsewhere. In 1926, he had begun to have attacks of intermittent renal colic, with distention of the right kidney. Intermittent ureteral catheterization had been

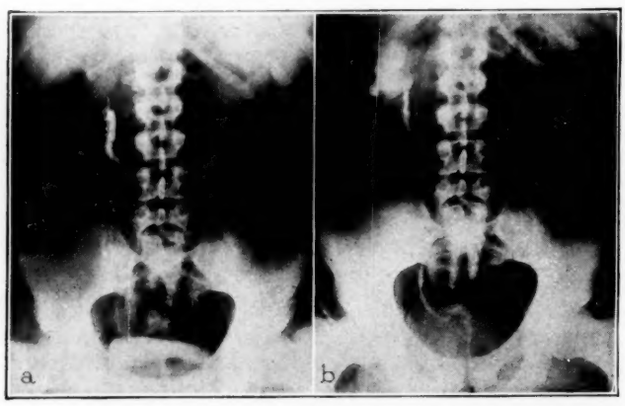

Fig. 8 (case 9).—*a*, ureteropyelogram showing obstruction at ureteropelvic juncture following pelviolithotomy done elsewhere; *b*, pyelogram following ureteropyeloneostomy showing patent anastomosis.

necessary. In August, 1928, prior to admission, he had suffered a similar attack, but removal of the catheter from the right renal pelvis had been followed by recurrence of symptoms, and urine did not drain from the kidney. With the ureteral catheter in the kidney, excretion of phenolsulphonphthalein was 40 per cent in two hours. August 15, cystoscopic examination revealed a single right hydronephrotic kidney, with a capacity of at least 150 cc. In the urine from it there was pus graded 1.

The blood urea varied from 28 to 40 mg. in each 100 cc. August 15, ureteropyeloneostomy was performed. Anastomosis was made between the ureter and pelvis at the most dependent portion of the latter. The kidney was hugely hypertrophied, and the pelvis greatly distended. Obstruction at the ureteropelvic juncture was caused by pressure of the renal pedicle. Nephrostomy was done simultaneously to remove tension from the anastomosis.

Fifteen days subsequent to operation, the wound was healed and from 2,000 to 3,000 cc. of urine was being passed from the urethra daily. The patient was gaining in weight and his condition was excellent. In May, 1929, the patient reported that his general condition was excellent, except that he found it necessary to lie down once or twice a day in order completely to empty the kidney.

Cystoscopic examination, June 10, revealed retention of 30 cc. of slightly turbid urine in the right renal pelvis. Indigo carmine appeared in the urine eight minutes after intravenous injection and was excreted in normal quantity. A Garceau catheter slipped easily into the renal pelvis. Blood urea was estimated at 38 mg. in each 100 cc. Ptosis of the right kidney led to the belief that it was producing some angulation of the anastomosis when the patient was in the upright position, and nephropexy was advised. This was done, June 26. July 3 the patient was out of bed and the kidney was emptying completely.

CASE 9.—A man, aged 24, had undergone operation elsewhere for removal of a calculus from the pelvis of the right kidney in March, 1928. Postoperative obstruction at the ureteropelvic juncture had occurred, producing attacks of pain in the right renal region.

Cystoscopic and pyelographic examination, March 15, 1929, showed the right ureter occluded at the ureteropelvic juncture. From the right kidney, however, some urine was draining which contained pus, graded 3. An attempted pyelogram of the right kidney showed that the opaque substance did not enter the pelvis (fig. 8 *a*). Excretion of phenolsulphonphthalein from the right kidney was estimated as a faint trace and that from the left kidney as 10 per cent. The return of indigo carmine from the right kidney was graded 3 and that from the left kidney, 4. The left kidney was normal.

Operation was performed, April 2, and obstruction from a dense scar was found at the right ureteropelvic juncture. Ureteropyeloneostomy and nephrostomy were performed.

The postoperative course was uneventful. Postoperative cystoscopic and pyelographic examination, June 12, showed good urinary drainage from the right kidney. The urine was practically negative to examination. Indigo carmine from the right kidney was graded 2, and that from the left kidney 4. The ureteropyeloneostomy anastomosis was patent and well shown in the pyelogram (fig. 8 *b*). There was dilatation of the pelvis and upper calix. The general condition of the patient was excellent at the time of his dismissal, June 28.

TECHNIC OF URETEROPYELONEOSTOMY

In the two cases in which this operation was done, lateral anastomosis was made between the ureter and the dependent portion of the hydronephrotic renal pelvis. A ureteral catheter was used temporarily through the anastomosis to serve as a scaffolding for healing.

ESTIMATION OF VALUE OF OPERATIVE PROCEDURES

The value of plastic procedures on the kidney, pelvis and ureter from which the outflow is obstructed is well illustrated in two of our cases in which the plastic operations were done of necessity. In one instance the hydronephrosis was bilateral, the resultant process of large size, and the degree of infection considerable; in the other instance the obstruction of the ureteropelvic juncture was complete and the kidney was solitary. Both patients made good recoveries from the operation and have remained well. Pyuria complicating the hydronephrosis does not seem to have compromised the surgical result; the main factor in recovery seems to have been complete removal of obstruction. The degree of infection in the kidneys was diminished and the function improved. Furthermore, it is hoped that the rapidly increasing degree of ureteral obstruction was relieved and that this gives an infinitely better prognosis that otherwise would have been possible.

In only one of the nine cases (ten operations) was secondary nephrectomy necessary; in this case the hydronephrotic pelvis was of a capacity of approximately 450 cc., and infection and edema caused obstruction of the ureteropelvic juncture. The decision to attempt renal pelvic resection rather than nephrectomy probably was unwise because of the extreme degree of hydronephrosis and of obstruction of the renal parenchyma. Not only did the other patients make good clinical recovery, but the results of cystoscopic exam-

ination, as regards urinary drainage and renal function, were satisfactory. Postoperative urographic examination showed that the renal pelves were approximately normal.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. VON LICHTENBERG, QUINBY, AND WALTERS AND BRAASCH

DR. E. L. KEYES, New York: The authors in this symposium in describing their operations have assumed something that perhaps not all of us are aware of. We cannot do plastic operations on kidneys that are materially infected. They will break down and scar tissue will cause kinking and obstruction, which is not calculated to give good results. Secondly, one must have been a urologic surgeon for many years, as I have been, to appreciate that this is not the first wave of enthusiasm. After Fenger reported his success in this field the literature was filled with case reports, and then they petered out, because the surgeon who is not thoroughly familiar with the kidney pelvis and ureter cannot do this work. This is true even with the various technics which have been described. In the third place, I think the drainage emphasized by Professor von Lichtenberg is essential, for division of the ureter and reimplantation arrests the peristaltic impulse. If, as Dr. Quinby so engagingly suggests, it is true that even touching the ureter interferes with peristalsis, certainly division does so. Professor von Lichtenberg said that he had ten cases of ureteral obstruction by aberrant vessels. In nine he did not resect. It is my impression that we are all likely to be tempted to do plastic operations when they are quite unnecessary. Fantastically large hydronephroses may be moved around until they can be drained by the dependent ureter. In the interesting case reported by Drs. Walters and Braasch, in which they resected the top of the kidney pelvis and obtained good drainage, I imagine that the position in which they left the kidney had much to do with the fact that good drainage was obtained. Dr. Marion cuts the artery rather than the ureter. If the kidney is dilated it is not usual that the amount of parenchyma thus lost may be very great. I have done this operation myself and have not regretted it; yet I believe fatalities have been reported from the death of large portions of the kidney thus operated on.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: Professor von Lichtenberg's results are particularly interesting in that he had such a small number of cases which required nephrectomy following plastic operation. This should encourage more attempts at conservative operation, even though the renal pelvis is greatly dilated. Dr. Quinby deserves much credit for having called our attention several years ago to the feasibility of conservative surgery with pyelectasis, and the results that he gave today speak for themselves. I wish to emphasize the importance of a point which Professor von Lichtenberg made; namely, the difference between mechanical and atonic dilatation of the ureter. It is generally recognized that dilatation of the ureter and pelvis may be present as the result of cicatricial changes in the wall. One would logically assume that if this were the only factor present, a plastic operation would hardly be called for. There are, however, usually secondary mechanical factors present, which may be removed by plastic operation with good results. I would call attention to a type of hydronephrosis in which no actual constriction can be demonstrated in the ureter and which is apparently caused by a spastic condition at the ureteropelvic juncture. Professor von Lichtenberg referred to this interesting condition, which Papin was among the first to describe. I called attention to such an etiologic factor several years ago in a paper on disturbances of the nervous mechanism of the urinary tract. In the absence of evidence of actual obstruction, resection alone would not suffice to restore drainage. It will be remembered that Papin advised resection of the renal nerves, but those who have tried to do this have been struck with its difficulty. What guide have we in determining the advisability of resection? The functional test has been employed for this purpose, but I know of no condition in which the functional test leads to greater error in estimating the functional capacity of the kidney than in pyelectasis. It is well known that the dye secretion will be delayed a long time after injection, giving the impression of widespread renal destruction, and at operation little injury to the parenchyma may be observed. On the other hand, the kidney function may show practically no change and yet there may be considerable injury to the renal substance. Pyelographic data and evidence of infection will give a more accurate idea of the renal condition than any other method. It is surprising how a greatly dilated pelvis will return to an approximately normal condition. The illustrations that Dr. Walters and I presented give a more optimistic view of the results than Dr. Quinby voiced, such results being dependent more on the degree of infection than on that of obstruction.

MR. R. K. LEE-BROWN, Sydney, Australia: I wish to speak a little more from the anatomic than the clinical side, as I have done some work on the renal circulation. The renal artery at the hilum of the kidney generally has an anterior and a posterior division, which supply the corresponding areas of the kidney. These two parts can be completely separated and replaced without the slightest evidence of any tearing or breaking of the vessels. This means that there is no anastomosis in the macroscopic branches of the renal artery. That in no way applies to the renal veins; they anastomose everywhere. Every branch of the renal artery supplies a given area of renal parenchyma. The entire substance of the kidney may not be supplied by branches coming off from the renal artery itself, in which case it will be supplemented by an aberrant vessel. In such a case the aberrant vessel will supply a given area of the kidney, and it will supply the glomeruli in that area. If that vessel is tied off all the glomeruli associated with that particular branch will immediately be put out of action. There is no preglomerular anastomosis anywhere in the renal artery; yet it is possible to tie off aberrant vessels or smaller branches of the renal artery without getting complete necrosis of the area supplied. This is due to the capillary anastomosis in the efferent glomerular plexus. There will be an atrophy of that area, with an atrophy of the glomeruli associated with that particular branch. One interesting factor in regard to the renal circulation is that it cannot be reversed. Clinically the renal circulation differs from the rest of the body to the extent that if one takes any branch of the renal artery and puts a clamp on it and divides it beyond the clamp, one need have no fear of hemorrhage from the distal end. If one irrigates the renal artery with physiologic solution of sodium chloride, there is a ready flow through the kidney; but if one irrigates the renal vein, there is never a drop through the renal artery. The kidney must be ruptured before the circulation can be reversed. That obstruction is evidently in the glomeruli, as there is no preglomerular anastomosis; yet one can tie off a branch of the renal artery without getting complete necrosis of the area supplied. This has a bearing on operative technic for repair work in hydrophrosis when there is an aberrant vessel. If there is no gross infection of the kidney and the aberrant vessel is not too large, I think there need be no fear about tying off the vessel if it is causing definite obstruction in the ureter. If one has plastic work to do, it is advisable not to do it in a kidney that is badly infected.

DR. A. J. SCHOLL, JR., Los Angeles: I wish to report a case which indicates that it is not always necessary to do an extensive plastic operation—that at times a minor procedure gives excellent results. A man, aged 40, complained of continuous pain across the lower part of the back. He had an intermittent fever of several months' duration and his weight dropped from 200 to 155 pounds (90.7 to 70.3 Kg.). He had been examined with the cystoscope several times without any definite result, but later a right hydronephrosis was found, together with a blood urea of 80 and a two-hour phenolsulphonphthalein return of 10 per cent. When I next saw him I gave him pelvic lavage. There was a large amount of pus in the urine from both pelves, which accounted for most of the fever and some of the pain. When I first saw him he had a blood urea of 69; the right pelvis contained 35 cc. and the left, 25 cc. of urine. After the pelves had been washed out several times his health improved, but the size of the pelves increased. They gradually grew so that the pelvis on the left contained 110 cc. and on the right, 150 cc. There was still a high degree of urinary infection in both kidneys.

DR. C. E. BURFORD, St. Louis: Three years ago I read a paper on kidney fixation for the relief of ureteral kinks causing obstruction, reporting forty-eight cases. During the past year we have had three cases showing peculiar conditions. There was retention in the kidney pelves, ranging from 20 to 30 cc. Two cases showed infection; one did not. Two showed narrowing of the ureter where it entered the pelvis; the other did not. The kidneys were low in two cases; the other kidney was high, with a slightly redundant ureter. At operation, on carefully exposing the pelvis of the kidney, we found no evidence of constriction, but we did find at the ureteropelvic juncture, running parallel with the ureter, bands of fibers, much like the cords suspending the basket of a balloon. These bands were firm, but after they had been cut the ureter was free and slightly longer at that point. The results in these cases will lead me to look more carefully for these bands, which seem to splint the ureter and interfere with its action.

DR. B. A. THOMAS, Philadelphia: We have two main criteria by which to judge what shall be the treatment; one is the size, shape and position of the kidney as shown by the pyelogram, and the other is the determination of the respective functions of the kidneys. Dr. Braasch has pointed out that the function of the particular kidney as shown by an elimination test does not necessarily parallel the retention test. This is easy to explain if it is remembered that the function of both kidneys must be impaired to a certain degree to cause retention of nitrogen in the blood; when one kidney is functioning normally and the other is diseased, there will be no nitrogen retention in the blood, although a test of elimination, as indigo carmine or phenolsulphonphthalein, may reveal impairment of function on the affected side. The reason why nitrogen retention may not occur lies in the remarkable renal reserve—only one seventh of the kidney parenchyma being required normally to perform the renal function. I feel, therefore, that in judging these cases as to whether they shall be treated by some form of plastic surgery or by nephropexy or nephrectomy, much study and discrimination are in order. When there is impairment of the function of the kidney in question, and it is not susceptible of improvement by ureteral dilation and other palliative procedures, surgical intervention becomes obligatory. If, by ureteropyelography, nephroptosis can be excluded as the cause of the disorder, and considerable parenchyma exists, some plastic operation should be done; if ptosis is demonstrable, either nephropexy per se or supplementary plastic surgery should be practiced; if, by pyelography and a functional renal test, little normal kidney tissue is shown to remain, and the other kidney is functionally sufficient, nephrectomy is the operation of choice. It is true, as borne out by Professor von Lichtenberg's results, that the mortality from ureteropyeloneostomy is not what it used to be. I feel strongly that these patients should have ureteropyelograms, not only in the supine position but in the erect position as well, and I feel that in that way we shall find the true cause of the obstruction, which in not a few cases will be found to be due solely to nephroptosis and fixation of ureteral kinks incident to nephroptosis. In advocating more nephropexies than have been done in the past two or three decades, I do not wish to be misunderstood, as I firmly believe that suspension should not be done if the threat of kidney destruction from infection or hydronephrosis can be averted by palliative external supportive measures; but when in the experience of one urologist twelve nephrectomies have been found necessary in the treatment of seventy-five cases of nephroptosis, with or without complications, the subject becomes a matter for serious thought, and the question arises, Were these patients properly treated during the early months and years of their uncomplicated nephroptosis?

DR. H. W. HOWARD, Portland, Ore.: The dynamics of the ureter is a subject that interests me. It is referred to, I think, by Dr. Braasch when he speaks of atony of the ureter. It has much to do with the quality of urine delivered, and the default in this function has a marked effect on the quality and quantity of urine excreted. The dynamic state of the ureter can be recorded by the tracing the ureter will make on a smoked drum. In a normal ureter, the tracing tends to stay toward the base line. The waves illustrate the strength of the peristalsis of the ureter. Feeble waves are found to occur commonly in pyelitis, in which there is apparent deficiency of ureteral function. I have also found this condition in stone in the ureter. I have observed the condition frequently in chronic nephritis, and I am not certain but that there may be some relation between the two.

DR. VINCENT J. O'CONOR, Chicago: The most recent and most scientifically accurate criterion in the study of hydronephrosis has not been mentioned in any of these papers. Fractional pyelography or pyeloscopy will accurately demonstrate the exact emptying time of the pelvis and ureter. It will help us to distinguish the mechanical, or obstructive, dilatation from the atonic type. It has been my experience that often the smaller hydronephroses show a more greatly delayed emptying time than the larger ones. I feel that fractional urography in both the prone and the upright positions will give us most valuable information which will assist us in deciding whether a nephropexy and proper fixation of the kidney will be sufficient, or whether a plastic operation on the pelvis will be necessary.

DR. GEORGE W. HARTMAN, San Francisco: A wave of relief seemed to pass over the audience after Dr. Keyes' discussion that we were not all to be called on to perform these operations immediately. In Professor von Lichtenberg's clinic the large amount of material handled, diagnosed and subjected to operation enables him to perform smoothly what little short of a genius could handle. I do not feel that we all possess the talent in equal measure and hope that we will bear this in mind and utilize plastic surgery in our specialty only when and where it is plainly indicated, so that this new and reawakened art will not fall into disrepute.

PENETRATING WOUNDS OF THE CHEST

REVIEW OF THREE HUNDRED AND FORTY-ONE CASES *

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ATLANTA, GA.

During the seven years from 1922 to 1928 inclusive, among 33,412 patients admitted to the Emory University Division (colored) of the Grady Hospital (municipal) of Atlanta, 374 patients were suffering from wounds of the chest. From the history, physical signs, roentgenograms and clinical course, 341 of these cases were diagnosed as penetrating wounds. There were 261 stab wounds, various kinds of knives being the commonest weapons used. Contrary to the tradition of the colored race, the razor was not employed. While this weapon is efficient in slashing throats, it is not so successful in reaching the heart and other thoracic viscera. The ice pick proved to be a handy instrument, and penetrated the chest in eighteen cases. There was one penetrating wound due to an automobile accident, and one caused by a falling roof. The number of gunshot wounds was seventy-eight. One bullet perforated the chest from side to side without causing pneumothorax or hemothorax, and the patient recovered. Male patients numbered 298; females, forty-three. The ages ranged from 10 to 65.

Fifty-two cases were found with pneumothorax, forty-nine with hemothorax and 108 with hemopneumothorax. The extent of pneumothorax varied from an almost indistinguishable amount of air to an amount causing complete collapse of the lung. The evidence on which the diagnosis of fluid in the pleura was made, presumably blood, was furnished in most cases by the

* From the Department of Surgery, Emory University.
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physical signs and the roentgen observations. Blood was withdrawn by aspiration in sixty-eight cases. When the fluid was not withdrawn, the quantity was judged to be so small, or the patient was doing so well in spite of it, that its removal did not seem to be warranted.

In the largest group of cases, 132, while no air or fluid in the chest was demonstrated, it was agreed by several observers that sufficient proof existed to justify the diagnosis of penetration. Such proof included the history of the injury, the character of the weapon used, lagging of the affected side on respiration, and the presence of moist râles in the area involved. In these cases there was more or less shock, while later there might be cough, with or without bloody sputum, which could not be explained by other lesions. Sometimes the patient gave a history of expectorating blood immediately after his assault, although this symptom might be absent after admission to the hospital. Usually increased pulse rate, fever and leukocytosis were present from the beginning. Then decreased resonance and diminished breath sounds were noted, and in a few days came the report from the roentgenologist of increased density of lung tissue with slight elevation of the diaphragm on the affected side. In small punctured wounds, a positive diagnosis of penetration often was difficult to establish.

Fig. 1.—Stab wound of the chest with an effusion completely filling the right pleural cavity. The heart and mediastinal contents are displaced to the left.

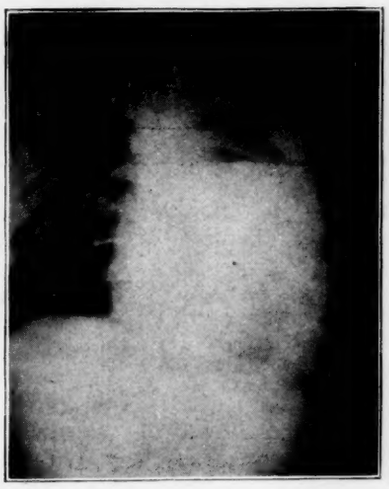

Fig. 2.—Stab wound of the left side of the chest causing hemopneumothorax. There is a definite fluid level and the lung is irregularly collapsed and the diaphragm elevated.

Injury of the pericardium alone was reported in one instance, and injury of the heart five times. The incised pericardium was repaired, and the patient got well. Suture of the heart was attempted in two cases, with one recovery. Among this number of chest wounds one would expect to find frequent involvement of the heart. No doubt in stab wounds the assailant directed his blow at this vital spot, but either his aim was bad or the stroke was parried. The majority of the patients were wounded in the side or back. It is possible that some who were killed by firearms, and who expired almost on entering the hospital, sustained heart injury which was not recorded. A large percentage of post-mortem examinations are now performed in the hospital, but during the period that most of these statistics were collected autopsies were so few that the extent of trauma occurring in cases not submitted to operation could not always be ascertained. Three cases of injury of the diaphragm were recorded, all sutured, and all the patients died. Fracture of the ribs was not a common or deadly accompaniment. Six cases were tabulated, with from one to five ribs broken and all the patients lived. Four cases of pneumonia developed, with two fatal terminations.

The slight incidence of infection revealed by this review gives interesting figures. Empyema and other forms of infection have been regarded as natural sequelae of penetrating wounds of the chest. In this series there were four cases of empyema, with one death; one case each of abscess of the chest wall, cellulitis and a badly infected wound, in all of which the patients recovered. Smears and cultures were made in suspected cases. There were several minor skin infections following suture of the wounds, but not serious enough to prolong the patients' stay in the hospital. In a few cases in which the chest wall and other parts of the body were injured besides the pleura, the pleural wound was the only one to escape infection. So it might appear that the pleura is endowed with more power to resist microbic invasion than has been supposed. Certainly the condition of the majority of these patients was such as to invite infection. Most of them were very uncleanly in person; many were more or less addicted to alcohol or drugs, and 40 per cent of 245 patients tested gave positive Wassermann reactions.

Fig. 3.—Stab wound of the right side of the chest with practically complete collapse of the lung and pneumothorax. A dense band of adhesions extends from the collapsed lung to the lateral wall of the chest at the level of the interlobar fissure. Diaphragm flattened as the result of air pressure.

Fig. 4.—Hemopneumothorax of the left side of the chest, with collapsed lung and a small amount of fluid, with a fluid level at the base. The diaphragm is outlined by air in the cardiac end of the stomach and splenic flexure of the colon.

Cellular emphysema was registered in twenty-five cases. This condition usually denotes traumatic communication with the respiratory tract, but not always, so that its presence is not pathognomonic of such injury. The air may be driven into the tissues through the

external wound and be sucked in more extensively by the movements of respiration. Crepitation was noted in several nonpenetrating chest wounds.

Air was removed by aspiration in three cases of pneumothorax. The longest time that pneumothorax was known to persist in any patient was sixty days. In sixty-eight cases blood was obtained; in eight cases no air or fluid was withdrawn on aspiration. In one patient blood was evacuated from the pleura as late as fifty-one days after injury. Five of the patients from whom blood was taken died, but it was not thought that this treatment contributed to the outcome, since in none of these cases were the amounts of blood considerable. The patients in whom aspiration was done most often, and who yielded the most blood each time, were among those to get well. Aspiration was done seven times in one of these cases. In others as much as from 500 to 1,500 cc. of blood was withdrawn at a single tapping, while one case yielded 2,700 cc. of blood or bloody fluid at one time.

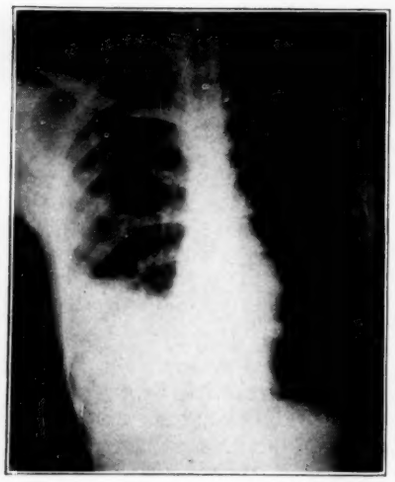

Fig. 5.—Stab wound of the right side of the chest with a small clot at the costophrenic angle and irregular thickening of the pleura.

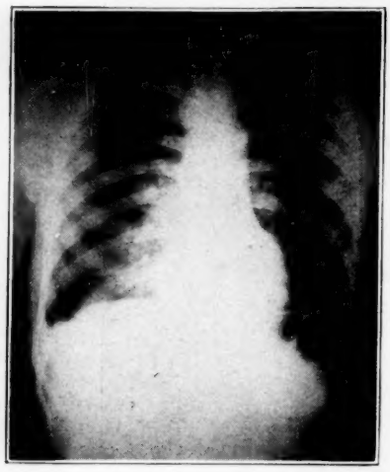

Fig. 6.—Cellular emphysema of the right side of the chest wall and neck. Slight congestion of the right lung and a small effusion in the costophrenic angle. This illustrates the minimum type of reaction in the lung sometimes accompanying a penetrating wound. Cellular emphysema does not always indicate communication with the respiratory tract.

Thirteen was the total number of operations performed as the primary treatment, excluding procedures for later developments, such as empyema. Besides the operations already mentioned, there were three ligations of the intercostal artery, with one recovery, and two ligations of the internal mammary, without recovery. Exploratory thoracotomy for hemorrhage was done once, with failure to save the patient. A lung protruding through the only sucking wound in the series was replaced, and the wound closed, with a good result. The chest wall always should be examined for the source of severe bleeding. Not infrequently a spurting intercostal or internal mammary artery has been overlooked, with disastrous results. It is said that the blood pressure in the pulmonary vessels is one third of that in the systemic vessels, so that hemorrhage from lung tissue, unless a large vessel is bleeding, is less apt to prove fatal.

The number of deaths in 341 cases of penetrating wounds of the chest was fifty-one, or 15 per cent, a low mortality rate, doubtless due to the preponderance of small wounds. Thirty-one deaths were charged to gunshot wounds. The fatal results from chest trauma alone, excluding the patients who died from shock and hemorrhage during the first twenty-four hours, numbered eight, or 2.3 per cent. Most of those who died within the first twenty-four hours probably had irremediable injury to the heart or great blood vessels. The deaths in cases uncomplicated by other mortal wounds, such as those of the abdomen, were thirty-four, or 10 per cent.

Eighty-nine patients were discharged as improved and 201 as cured. Many patients markedly improved left the hospital suffering from disabilities other than those attributable to chest injuries. If the patients classed as cured could be examined at present, many probably would exhibit pathologic changes caused by these wounds. Once they are out of the hospital, however, such patients are hard to trace. Many of them owe their misfortune to law-breaking, and they do not care to cooperate in a follow-up system. They are afraid the police are still on their trail. Among other problems which should be investigated are the late effects of hemothorax. Roentgenograms made of several patients before their discharge showed that dense bands of adhesions had formed within a few weeks.

Some patients were brought to the hospital as late as three days after injury, but the majority arrived in a few hours. They were given the usual first-aid treatment in the outpatient clinic, where the wounds were cleansed and sutured, or drained, if necessary. Formerly 1,500 units of tetanus antitoxin was administered, but since one patient developed gas gangrene the custom has been to give a prophylactic dose of from 20 to 50 cc. of the polyvalent anaerobic antitoxin. No case of tetanus was reported. Absolute rest was pre-

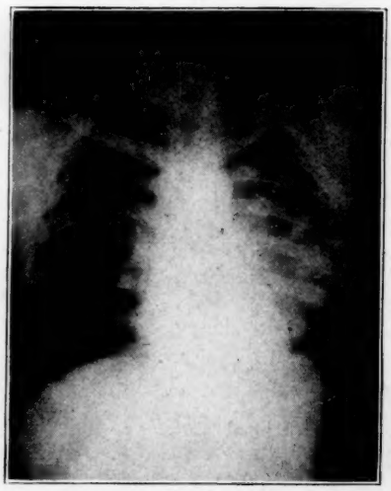

Fig. 7.—Bird shot in the left side of the chest penetrating the pleura. There is a slight increase in density over the affected area due either to a thin effusion or to pulmonary congestion.

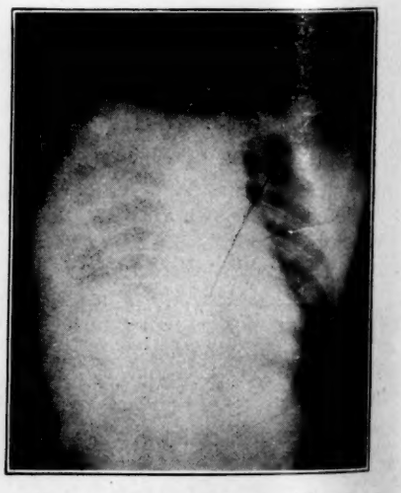

Fig. 8.—Gunshot wound of the right upper portion of the chest with elevation of the right side of the diaphragm and a thin effusion over the lung. Diaphragmatic elevation sometimes is the chief roentgen evidence of penetrating wounds.

scribed, morphine generally being required, but not always. Most patients were well strapped with adhesive plaster to immobilize the affected side of the thorax, but many patients were more comfortable without such treatment. Probing for bullets was not done, and no effort was made to extract them unless they could be felt easily in the subcutaneous tissues.

Under this simple regimen, recovery in the milder cases occurred in a few days. With the idea that a collection of blood and the formation of blood clot in the pleural cavity tends to check further bleeding, aspiration usually was deferred for the first forty-eight hours. The time and frequency of this procedure, however, was determined by the amount of pain and dyspnea present. Cyanosis is not easily detected in dark-skinned individuals. Another important indication for the removal of blood was fever. Often a high temperature dropped to normal immediately following the aspiration of a quantity of blood. Apparently such temperature was aseptic in type, since infection was so rarely encountered. Shock was combated by the ordinary remedies; hemorrhage subsided without operation in 97.7 per cent of the uncomplicated cases in which the patients died after the first twenty-four hours. Hypodermoclysis was used frequently. Blood transfusion was not done as often as it should have been. Donors are hard to get in this class of patients, but preparations for transfusion in severe cases should be begun as soon as the patient enters the hospital.

The great majority of cases of penetrating chest wounds will yield to conservative means; a few cases demand radical surgery. The danger of satisfactory results in the nonoperative treatment is that when a case is presented which calls for more extensive measures, the different situation is not realized, or realization comes too late. In one of the eight uncomplicated cases in which the patients survived the first twenty-four hours the patient did not die until the seventeenth day, and yet no operation was performed. Reviewing this patient's record, it is seen that he continued to bleed internally, and finally developed deep-seated suppuration, and succumbed. Perhaps he and others in the group could have been transferred to the list of the recovered by judicious operative intervention. Obviously, hemorrhage is the principal cause of death in penetrating wounds of the chest. Such was true in this series. When conservative treatment is ineffective, valuable time must not be lost in recognizing the fact. The source of continued bleeding must be discovered and controlled.

CONCLUSION

In civil practice, sharp pointed weapons are responsible for the majority of penetrating wounds of the chest. Penetration may exist without the presence of air or fluid in the pleural cavity, although in some cases the diagnosis is difficult to establish. Injuries of the heart and diaphragm, pneumonia and fractures of the ribs occur infrequently. Empyema and other serious infections result in less than 2 per cent of the cases. Hemorrhage is the commonest cause of death. The chest wall should be examined for arterial bleeding. Pain, dyspnea and cyanosis are relieved by aspirating blood, but intrathoracic hemorrhage is controlled by deferring aspiration for forty-eight hours. Aseptic temperature may be reduced by removing blood from the pleura. Nonoperative treatment gives a low mortality rate, but in a few cases radical surgery is urgently indicated. The final effects of these wounds should be studied.

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THE DIAGNOSIS OF DIAPHRAGMATIC HERNIA WITH ACUTE OBSTRUCTION *

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A careful analysis of reported cases of traumatic diaphragmatic hernia since the advent of roentgenology discloses the fact that the majority of these patients were suffering little discomfort at the time of examination so that roentgenographic or fluoroscopic confirmation of the diagnosis was entirely possible. However, during the past ten years six patients have come under my personal observation who were in acute pain or a state of shock so severe that it was impossible to confirm the diagnosis by this method. It is not at all probable that my experience has been unique in this regard.

Because of the frequency of this traumatic condition and the consequent demonstration of need for accuracy in the weighing of symptoms and clinical values, another report of a surgeon's experience may not be amiss. It is my purpose in this article, therefore, to review selected typical cases from this group, and to emphasize the importance of certain symptoms and physical signs found trustworthy in arriving at a correct diagnosis.

With the increasing use of the x-rays, the impression has become more and more general that, in cases of probable thoracic involvement and uninterpretable thoracic and abdominal signs, diaphragmatic hernia is to be suspected and the proper course to follow is to have the patient undergo a roentgen examination in order to make the diagnosis. Watson [1] in his recent book, a chapter of which is devoted to diaphragmatic hernia, states that "the symptoms of diaphragmatic hernia are often indefinite and it is only since the advent of the roentgen-ray examination that it has been possible to diagnose the condition during life."

Unquestionably when a roentgen diagnosis is possible it is advisable and should be used as a confirmatory measure in those cases which come under observation in a fairly quiescent symptomatic state. Such a procedure, however, offers little in consolation to the one who comes in a state of acute obstruction or to the surgeon who attempts to repair a rent in the diaphragm through an exploratory laparotomy incision.

The difficulty in arriving at a diagnosis in cases of diaphragmatic hernia has been recognized since 1724, when Stehelinus [2] attempted to review the literature and the cases reported up to that time.

In 1912 Giffin [3] made a thorough review of the literature on this subject and was impressed by the infrequency of correct preoperative or antemortem diagnosis. He writes as follows:

> About 650 cases of diaphragmatic hernia have been reported, of which it would seem fifteen were correctly diagnosed during life. It is safe to say, however [he continues], that many mistakes have been due to the fact that the physician was unprepared for the condition; that the symptoms and signs of diaphragmatic hernia were often quite clear but were not elicited because of lack of familiarity with them.

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* Read before the Section on Surgery, General and Abdominal, at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 11, 1929.

1. Watson, L. F.: Diaphragmatic Hernia, St. Louis, C. V. Mosby Company, 1924, chapter 17.
2. Stehelinus, quoted by Watson (footnote 1).
3. Giffin, H. Z.: Diagnosis of Diaphragmatic Hernia, Ann. Surg. **55**: 388, 1912.

Scudder, reporting a case in 1912, states that of fifty-three cases in which the condition of hernia was found, only six had been properly diagnosed prior to the operation.

Since then, with the more extended use of the x-rays in routine physical examination, many more cases have been collected for publication with a greater incidence of correct diagnosis, a situation that leads to a false sense of security on the part of the physician because of the fact that while we have been accumulating numbers for statistical purposes the data have been collected from cases in which the patients were suffering little discomfort from the disorder, and we have gained little that will be of aid in dealing with the emergency of an acute obstruction. For the purpose of this discussion attention is drawn chiefly into the field of symptoms

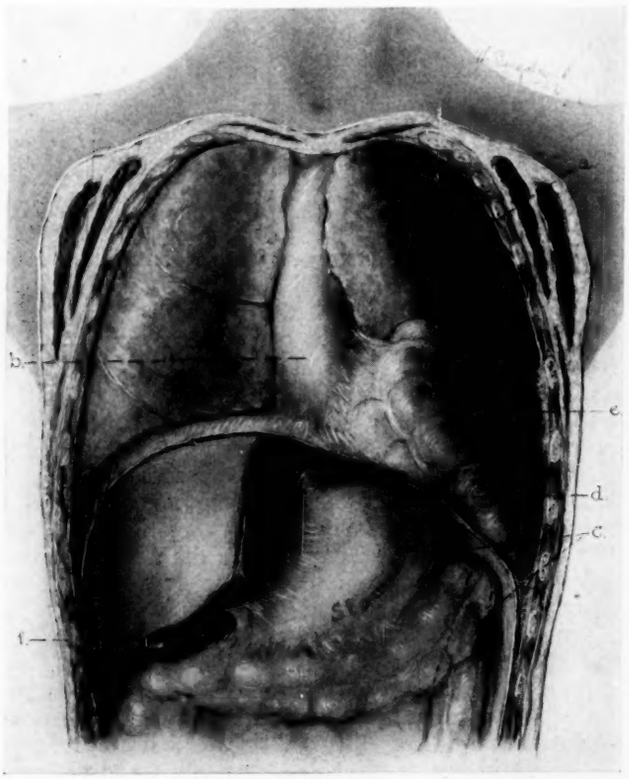

Fig. 1.—Condition in case 1: *a*, collapsed lung; *b*, displaced heart; *e*, hernial orifice; *d*, flattened arch of diaphragm; *c*, displaced transverse colon; *f*, gallbladder.

and physical signs, for on these agents must rest the burden of proof in the correct diagnosis of this condition.

Later in the article to which previous reference has been made, Giffin[3] says: "If a history of severe trauma be elicited . . . a crushing injury to the lower thorax or upper abdomen; a severe twist with consequent strain upon the organs of the upper abdomen and diaphragm; a sudden doubling of the body with the chest between the knees; a penetration of tissues in the region of the diaphragm, as in a stab wound, the existence of a rupture of the diaphragm should be suspected."

In 1912, Carson and Huelsmann[4] published an article on diaphragmatic hernia diagnosed before operation in which they named five physical signs of diaphragmatic hernia: first, displacement of the heart; second, drawing in of the abdomen; third, intestinal noises in the chest; fourth, absence of breath sounds and change in percussion note; fifth, changeable character of signs on change of position of patient as well as with the patient in the same position.

The three patients whose cases are reported here came under my care by way of consultation, in two instances of which the diagnosis was confirmed at operation, the third on the autopsy table.

Each gave a history of previous injury—one a stab wound, another a fall, the third a crushing injury to the upper portion of the abdomen. The symptoms noted were without exception those dependent on a complete obstruction of some portion of the gastrointestinal tract, associated with certain secondary phenomena incident to the inclusion of an abdominal viscus within the thoracic cage. The physical signs aside from the evidence of obstruction were limited definitely to the thorax, and a clear-cut diagnosis of the lesion could be made without the use of any agency aside from the means usually employed in making a routine examination.

REPORT OF CASES

Case 1.—*History.*—A negro man, aged 22, was admitted to the hospital, November, 1917, for a stab wound of the left side of the thorax which had occurred two days previously. The wound was sutured and the patient was discharged as well after one week. Since then he had had several attacks of indigestion associated with vomiting lasting twenty-four hours.

The patient was again admitted to the hospital, Oct. 27, 1920, with the complaint of cramps in the stomach. The attack began at 5 a. m. with pain in the abdomen, generalized in character, but more severe in the left hypochondrium. Vomiting began at 10 a. m. and continued throughout the day. There was one bowel movement without relief.

Physical Examination.—The patient was well developed and well nourished. Lying in the dorsal position in bed he presented a condition of acute abdominal pain as evidenced by the intermittent spasm-like contraction of the abdominal muscles.

The excursion of the left side of the thorax was inhibited. Litten's phenomenon was absent. The apex beat of the heart was visible in the fourth interspace midway between the nipple line and the left costal margin. A stab wound was visible in the eighth interspace of the left midaxillary line.

On palpation there was inhibition of the undulatory movement of the thorax on the left side and fixation of the left costal margin during the inspiratory phase. The movement of the right side was normal.

Percussion revealed an area of tympany over the anterior portion of the chest as high as the fourth interspace, which extended into the axillary space where it blended with an area of dulness. The dulness shifted with change of position of the patient. The heart was displaced to the right, extending from a point midway between the nipple and the sternum to a point 2 cm. to the right of the right sternal margin.

On auscultation, the breath sounds were distant though not greatly changed in pitch over the area of tympany and dulness. Occasionally one could detect the bubbling of gas high in the thoracic cavity. The succussion splash was demonstrated in both the prone and the sitting position.

There was generalized increase in tone of the abdominal muscles with distinct spasm over the left side of the hypochondrium during attacks of hyperperistaltic activity. Tenderness was limited to the subcostal region in the left portion of the hypochondrium. Visible peristaltic waves were seen to move along the course of the transverse colon. Palpation upward beneath the left leaf of the diaphragm increased the reflex action of that muscle and was followed by a retraction of the costal margin during the respiratory phase for a prolonged period.

A diagnosis of left strangulated diaphragmatic hernia was made. I suggested further consultation and called Dr. C. F. Hoover, who confirmed the diagnosis. As the symptoms of

4. Carson, N. B., and Huelsmann, L.: Diaphragmatic Hernia Diagnosed Before Operation, Interstate M. J. **19**: 315, 1912.

obstruction were somewhat alleviated by this time, the patient was held for roentgen examination and class demonstration on the following day. Forty-eight hours later I operated through the thorax after removing the ninth rib. The abdominal viscera were replaced in the abdomen, the orifice in the diaphragm was closed, and the patient made an uneventful recovery.

The history of a stab wound in the eighth interspace followed by attacks of indigestion associated with vomiting should arouse suspicion of traumatic hernia of the diaphragm.

The crux of the situation in this case rests on these facts: a case of intestinal obstruction in which all physical signs are related to the thorax; a displaced heart; evidence of relaxed lung tissue at the left base, and a fixed costal margin. Such conditions can occur only in hernia of the diaphragm in an acutely obstructed state.

CASE 2.—*History.*—A white man, aged 62, married, had two children, both living and well. His mother died at the age of 30 of pulmonary tuberculosis when the patient was 6 months old. His father died at 83 of senility. He had no brothers or sisters.

The patient had the usual childhood diseases. He was never a strong child. He had a condition diagnosed as gastric fever at 25 years of age. At 30 years he had two attacks of neuralgia of the stomach. He had spells of indigestion two or three times each year throughout his life characterized by severe pain in the abdomen, and nausea. Of late years cranking an automobile produced severe dyspnea from which he would recover in a short time. Any exertion during the past two years produced dyspnea.

The patient's last illness began in much the same fashion as his previous attacks of indigestion, with severe pain in the abdomen, nausea and vomiting. It seemed to be precipitated by the ingestion of an unripe cantaloup at breakfast. The vomiting stopped after about one hour and did not again recur. Later in the day the patient ate his usual dinner and almost immediately thereafter was seized with a severe pain in the left portion of the hypochondrium, nausea, but no vomiting. On the following day, as the bowels had not moved, enemas were given without results. The pain continued throughout the day, but the patient was able to take liquids by mouth. On the following day the patient was unable to swallow liquids. After five days, the condition of the patient becoming gradually worse, as evidenced by the rapid weak pulse, dyspnea and dehydration, he was taken to the hospital, where roentgenograms of the colon were taken after barium injection. The colon failed to fill beyond the splenic flexure. The plates were inconclusive though of course they did show the cardiac displacement, which on physical examination of the patient was visible to the naked eye as well. Later in the day I saw the patient in consultation, when the following physical signs were noted:

Physical Examination.—The patient was lying on the left side, dyspneic and in stupor from which he aroused on our entrance. There was no complaint of pain but he resented being turned on his back for examination.

The integument was dry and cold. The lips and finger-nails were deeply cyanotic.

Inspection of the thorax revealed a greater anteroposterior and lateral diameter in the left side than the right, and the left side was practically stationary throughout the respiratory phase. The depression of the intercostal space was obliterated. The apex beat of the heart was visible in the fourth interspace 4 cm. to the right of the right sternal margin.

On palpation, the undulatory movement of the left ribs was markedly inhibited and the left costal margin was stationary. Vocal fremitus was absent over the entire left side but was present on the right. The apex beat of the heart was palpable in the fourth and fifth interspaces 4 cm. to the right of the sternum.

Percussion elicited a tympanitic note over the anterior portion of the left side of the thorax, which became flat in the posterior axillary line, with the patient in the recumbent position. Change in the position of the patient shifted this area of dulness. The right side of the thorax presented a resonant percussion note throughout save in the area occupied by the displaced heart. The cardiac dulness as elicited by percussion extended from a point 3 cm. to the right of the right sternal margin to the right anterior axillary line.

On auscultation there were no breath sounds audible over the left side of the thorax. On the right side a normal vesicular type of breath sound was audible throughout. On slight sudden rotation of the body a loud succussion splash could be demonstrated over all portions of the left side of the chest. The coin sound was demonstrable over a similar area.

The abdomen was scaphoid; the muscles were not rigid; there was no tenderness to palpation, and there were no palpable tumors.

A diagnosis of diaphragmatic hernia was made. Twenty minutes later the patient suddenly died and an autopsy was performed at once.

Autopsy.—There was a transverse rent in the diaphragm extending from a point 3 cm. lateral to the esophageal hiatus through the left arch for a distance of 12 cm. The stomach was

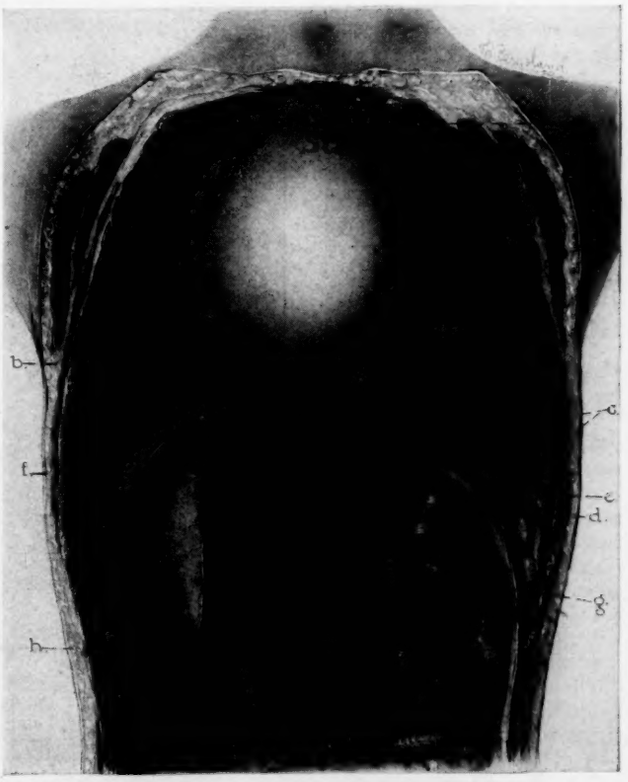

Fig. 2.—Condition in case 2: *a*, collapsed lung; *b*, displaced heart; *c*, hernial orifice; *d*, flattened arch of diaphragm; *e*, displaced transverse colon; *f*, esophageal hiatus; *g*, duodenum; *h*, distended gallbladder.

markedly distended, being filled with fluid and gas, and occupied the entire left side of the thorax, collapsing the left lung and displacing the mediastinum and the heart far to the right of the median line. The esophagus at the cardiac orifice and the duodenum just distal to the ampulla of Vater were occluded by the pressure of the hernial ring.

Twelve inches of the transverse colon protruded through the opening, its lumen collapsed and the wall swollen, edematous and discolored, but not gangrenous. In the abdomen the gallbladder was distended because of the occlusion of the common bile duct. The distal portion of the transverse and descending colon was collapsed; the jejunum, ileum and ascending colon were not distended.

Here again was a patient in a state of acute obstruction in which it is obvious that both the esophagus and the transverse colon were involved. The physical evidence of a tremendously distended thorax on the left side, marked displacement of the mediastinum away from the site of a collapsed lung, and signs of circulatory collapse led at once to the correct diagnosis.

I have often censured myself that I failed to apply the emergency treatment that might have saved this patient, namely, the insertion of a trocar directly through the anterior thoracic wall into the distended stomach. As it happened, the patient died while operative intervention was being considered.

CASE 3.—*History.*—A white man, aged 28, whose past history was negative, was working, Oct. 3, 1928, on the top of a 28 foot telephone pole, when it suddenly broke about 3 feet from its base, threw the patient to the ground and fell across the upper portion of his abdomen. The injuries were found to consist of a compound fracture of the left femur and a fracture of the left radius together with evidence of internal trauma which induced severe shock. The patient was moved to a neighboring hospital, where I saw him in consultation six hours later.

The patient complained of shortness of breath, and pain in the left side of the hypochondrium which was referred to the left side of the thorax and up to the left supraclavicular fossa. He resented the slightest movement, stating that it interfered with breathing and induced coughing and vomiting; he was able to take small quantities of fluids, which was followed by vomiting, the vomitus at times containing blood.

Physical Examination.—The patient was well developed. He reclined in bed in the semisitting position with every evidence of acute distress. The integument was warm and moist; the finger-nails and lips were cyanotic; the pulse was weak and rapid, and the blood pressure low.

Inspection of the thorax revealed a lack of undulatory movement on the left side below the fourth rib and an absence of movement of the costal margin during inspiration. Litten's phenomenon was absent.

Palpation confirmed the visible signs, and the diminution in tactile fremitus was marked.

The percussion note was tympanitic over the entire anterior portion of the left portion of the thorax, becoming dull in the seventh interspace in the midaxillary line. Dulness existed over the posterior part of the thorax from the inferior angle of the scapula to the base.

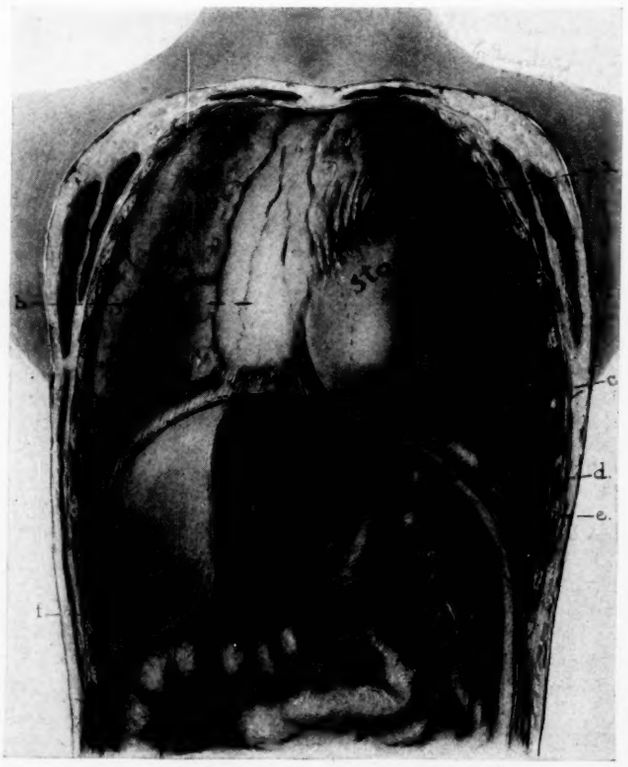

Fig. 3.—Condition in case 3: *a*, collapsed lung; *b*, displaced heart; *c*, hernial orifice; *d*, flattened arch of diaphragm; *e*, displaced transverse colon; *f*, gallbladder.

Auscultation revealed a distinct vesicular type of breath sound over the upper half of the thorax, becoming extremely faint toward the base, where it was replaced by bubbling gas sounds and a succussion splash. The heart was displaced toward the right, its centrum being in about the midsternal line.

There was generalized tenderness of the abdomen but no rigidity or evidence of peritoneal irritation. Deep palpation beneath the left costal margin induced spasm of the muscles in the region of the left portion of the hypochondrium.

A diagnosis of left, acute, traumatic diaphragmatic hernia was made.

Course.—Two and one-half months later the patient was brought to my office, where the diagnosis was confirmed by fluoroscopic examination of the stomach after a barium meal.

One month later I operated on the patient by the thoracic route after removal of the ninth rib. The patient made an uneventful recovery.

The history of a crushing blow to the upper left portion of the abdomen, followed by shock of a degree greater than would ordinarily follow such fractures as the patient had received, the evidence of collapsed lung tissue, and displacement of the mediastinum away from the affected side caused by the presence of an air-containing viscus in the thoracic cavity, all directed attention to the existence of an acute lesion of the diaphragm. In this case further observation and confirmation was made at a later time.

SYMPTOMS AND DIAGNOSIS

In order to analyze the distinctive physical signs that act as an aid in arriving at the correct diagnosis, these have been grouped under descriptive titles in about the order of their relative importance: (1) diminished excursion of the thorax; (2) impairment of resonance; (3) the absence of the Litten diaphragm phenomenon; (4) adventitious sounds; (5) cardiac displacement, and (6) circulatory collapse.

1. *Diminished Excursion of the Thorax.*—As first pointed out by Hoover,[5] the respiratory excursion of the thorax is the resultant of the antagonistic force exerted by the scalenus and intercostal muscles, which serve to increase the anteroposterior and transverse diameters of the thorax, and the diaphragm, which tends to increase its longitudinal diameter. Any factor tending to inhibit the one or enhance the action of the other will modify the respiratory movement.

In rupture of the diaphragm a disturbance in this balance of power may be effected in any of several ways: First, the tone of the muscle of the diaphragm may be markedly increased as the result of direct trauma, or spasm may be induced reflexly during the intermittent cramplike pain of an intestinal obstruction. In either instance the violent contraction of the muscle fibers of the diaphragm easily overcomes the elevating action of the intercostal muscles and the costal margin is held stationary during the inspiratory phase. Second, the weight of fluid accumulated in an abdominal viscus resting on the dome of the diaphragm may obliterate the arch and by causing it to contract in a more nearly straight line secure that mechanical advantage necessary to overcome the opposing action of the intercostal muscles with resultant fixation of the costal margin. Third, the development of pleural synechia with high fixation of the diaphragm to the thoracic wall will lessen the contraction curve by approximating the points of origin and insertion and, by directing the force of its muscle contraction into a straight line, fix or even secure

5. Hoover, C. F.: Respiratory Excursion of the Thorax, Oxford Medicine **2**: 29, 1920; The Functions of the Diaphragm and Their Diagnostic Significance, Arch. Int. Med. **12**: 214 (Aug.) 1913.

retraction of the costal margin during the inspiratory phase. Illustrations of each of these three methods of disturbed diaphragmatic function are given in the accompanying case reports. It has been of interest to check these observations, in quiescent cases, under the fluoroscope and to photograph the phenomena by use of the x-rays and motion pictures.

2. *Impairment of Resonance.*—On percussion, an area of tympany presents anteriorly as high as the third interspace with the patient in the recumbent position, while posteriorly an area of diminished resonance with elevation of pitch to the note is found, change in the position of the patient effecting a change in the site of tympany and area of increased density.

Tactile fremitus was diminished over both area of tympany and area of increased density.

3. *Litten Diaphragm Phenomenon.*—The activation of the diaphragm in securing a visible retraction of the costal and the intercostal spaces with its subsequent erasure during the excursion of the diaphragm and descent of the lung into the pleural sinus is absent in cases of diaphragmatic hernia during periods of acute obstruction, the dependent portion of the pleural cavity being obliterated and lung tissue collapsed or displaced by the foreign body with consequent diminution in its excursion during the respiratory phase.

4. *Adventitious Sounds.*—Auscultation over the area of tympany and diminished resonance present a distant vesicular type of breath sound with but slight elevation in pitch. The breath sounds are often obliterated by the bubbling of gas; a succussion splash may usually be demonstrated.

5. *Cardiac Displacement.*—Inspection of the thorax revealed a sign that in two instances led to the diagnosis, it being a visible apex beat midway between the nipple line and the left sternal margin. With one exception, cardiac displacement has been uniformly demonstrated in all cases which have come under my observation; a condition which has been denied but one which seems plausible as a diminution of the intrathoracic negative pressure must follow any break in the continuity of the diaphragm. Displacement of the mediastinum away from the affected side is but an evidence of nature's effort to equalize the pressure of the two halves of the thorax. Change in position of the heart may vary between the limits of a slight rotation, in which is demonstrated only a moderate narrowing of the precordial area of dulness, to a complete shifting of the position into the right axilla. These limits have been demonstrated in this series, but it has also been noted that the conditions in any given case are subject to great variation and dependent on the volume content of the misplaced viscus and the degree of obstruction.

6. *Circulatory Collapse.*—One may frequently be impressed with the rapidity with which the physical signs change in these cases. The patient may complain of a smothered sensation about the heart, shortness of breath, and dizziness. He perspires freely, the pulse becomes rapid and weak, blood pressure falls, faintness supervenes. The increasing distention of a transposed viscus in the thoracic cavity resulting in pressure on and displacement of the mediastinum cannot act otherwise than adversely on the circulating column of blood. In one instance in which the stomach under great tension filled the major portion of the thorax, it was easy to appreciate that the positive pressure in the pleural sinus exceeded that within the circulatory system and that death in this case was in all probability due to obstruction to the venous return. This situation is similar in its mechanism to the problem met by Piercy [6] as described in his article on bilateral hydrothorax, equalization decompression being required to prevent severe cardiorespiratory disturbances which followed unilateral aspiration. As presented, the case reveals the hydrostatic effect of unequal amounts of fluid in the two halves of the thorax. In each instance marked displacement and deformity of the mediastinum are seen, with torsion and unequal application of surface pressure to the walls of the great vessels which it contains.

Cyanosis and Dyspnea.—As pointed out by Lundsgaard and Van Slyke,[7] cyanosis does not usually occur in cases in which the lung is not only collapsed but compressed, their explanation being that in certain cases aeration of the lung still takes place and that in others increase in pressure in the pleural sinus approaching that in the pulmonary artery diminishes or prevents the continued blood flow through the part. In the instance of a contained abdominal viscus in the thoracic cavity, however, with intermittent periods of obstruction producing sudden great variations in vital capacity with compensating rapid shallow respirations and incomplete aeration of the terminal alveoli, the percentage of oxygen unsaturation of the arterial blood must at times be great, which, coupled with a certain amount of blood flow through a collapsed and unaerated portion of the lung, should account for the presence of cyanosis in certain cases during their more acute symptoms.

Asymmetry of the Hypochondria.—A further sign of perhaps inconstant value but noted on several occasions is a depression which occurred in the epigastrium and beneath the costal margin on the affected side, a condition that was accentuated by inspiration and associated with a deviation of the linea alba to the left. This sign may be due in part to the displacement of the abdominal viscera, but of greater importance is the fact that activation of the now flattened diaphragm no longer tends to increase the longitudinal diameter of the thorax. The capacity of the hypochondrium is, therefore, increased with the elevation of the thoracic cage during the inspiratory phase and the epigastrium is retracted on the affected side with deviation of the linea alba.

DIFFERENTIAL DIAGNOSIS

It is conceivable that difficulty might be encountered in differentiating between a case of diaphragmatic hernia in its quiescent state and one presenting the signs of diaphragmatic aplasia; or in the case of an intestinal obstruction developing as a separate entity in one with long standing and previously unrecognized eventration of the diaphragm. However, as so clearly and tersely explained by Korns,[8] the simple application of our knowledge of the physiology of the diaphragm renders confusion practically impossible. The accentuation of the curve of the diaphragm seen in eventration lessens its mechanical efficiency in coping with the elevating influence of the intercostal muscles, and there is an abnormal spread of the costal angle on the affected side during the inspiratory phase, whereas in hernia of the diaphragm the costal margin is found acting in its normal fashion or retracted during the inspiratory phase, as already more fully described.

6. Piercy, H. D.: A Physical Problem in Bilateral Hydrothorax, J. A. M. A. **84**: 167 (Jan. 17) 1925.
7. Lundsgaard, C., and Van Slyke, D. D.: Cyanosis, Medicine **2**: 1 (Feb.) 1923.
8. Korns, H. M.: The Diagnosis of Eventration of the Diaphragm, Arch. Int. Med. **28**: 192 (Aug.) 1921.

Hemopneumothorax.—In this instance there may be the associated history of trauma which, coupled with many of the signs of diaphragmatic hernia, may give pause to more serious thought in the differential diagnosis. However, the history and evidence of interference with the patency of the alimentary canal is lacking and we have at our command the exploratory needle, which should satisfy any element of doubt arising under such circumstances. The same procedure might well be applied in case of pyopneumothorax.

CONCLUSIONS

1. The diagnosis of diaphragmatic hernia without the assistance of roentgenology or fluoroscopy is difficult, but examinations by these means are not always possible in cases of trauma or acute obstruction. Therefore, careful study of physical signs and symptoms incident to the condition is important.

2. In three cases reported, the patients were suffering intensely or were in a state of shock so severe that the use of roentgenology was impossible.

3. A history of a penetrating wound or a crushing injury to the thorax associated with complete gastric or intestinal obstruction points to the possibility of diaphragmatic hernia.

4. Displacement of the heart to the right, and evidences of relaxed lung tissue at the left base associated with fixation of the costal margin on the same side, were the important signs in the diagnosis of the three cases reviewed.

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EMPYEMA, ACUTE, CHRONIC AND TUBERCULOUS

REPORT OF FIFTY CASES TREATED BY TIDAL IRRIGATION AND SUCTION *

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The treatment of empyema by tidal irrigation has been described in previous publications. Recently, however, I have been using an apparatus that permits a very satisfactory tidal irrigation since it adds fresh irrigating fluid at a point near the chest, gives the desired suction without any machinery or complicated drip apparatus, and automatically varies the amount of suction or positive pressure so as to distend the empyema cavity by adding clean solution, and then empty it by sucking off the diluted pus. As this alternation permits periodic distention of the cavity under slight positive pressure in the early stages of the treatment, it is hoped that by this action a too rapid expansion of the lung can be avoided. This periodic filling of the cavity should also prevent the formation of pockets of pus by adhesions between the parietal and the visceral pleura. The apparatus has already been used in a sufficient number of cases to demonstrate that it works more satisfactorily than any other apparatus so far employed. A brief description of it is given in the legend to figure 1.

Although a direct outgrowth of the experiences with fifty cases of empyema, it was hoped that if such a device would work satisfactorily it would permit the use of irrigation in other cavities in which there is no respiratory movement. A post-traumatic pyarthrosis of the knee joint, the etiologic agent being *Staphylococcus aureus,* has been treated by this method, with recovery within a week's time. The suction was released, positive pressure applied, and suction reapplied every fifteen

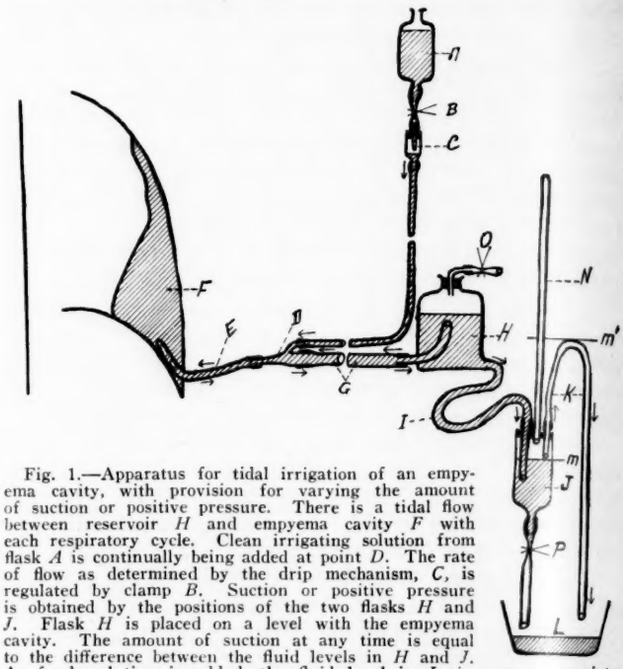

Fig. 1.—Apparatus for tidal irrigation of an empyema cavity, with provision for varying the amount of suction or positive pressure. There is a tidal flow between reservoir *H* and empyema cavity *F* with each respiratory cycle. Clean irrigating solution from flask *A* is continually being added at point *D*. The rate of flow as determined by the drip mechanism, *C*, is regulated by clamp *B*. Suction or positive pressure is obtained by the positions of the two flasks *H* and *J*. Flask *H* is placed on a level with the empyema cavity. The amount of suction at any time is equal to the difference between the fluid levels in *H* and *J*. As fresh solution is added, the fluid level in *J* rises, passes up into tube *N*, and the suction is diminished, or positive pressure can be added to flask *H* and cavity *F*. Since the walls of flasks *H* and *J* are rigid, all of the fresh solution, except that necessary to raise the fluid level in *N* and *K*, must flow into the empyema cavity, allowing it to fill by release of suction or even by the application of positive pressure as determined by the height of *m'*. As soon as the fluid reaches the level *m'* it overflows the arch in *K*; a siphon is thus established, the fluid level falls to *m*, suction on the empyema cavity is thus increased, and the diluted pus is drawn out into *H* as cavity *F* is diminished in size. The amount of variation in the maximum and minimum suction or positive pressure is regulated by the levels *m* and *m'*, which are adjustable. The rapidity with which this variation in suction occurs is dependent on the rate of inflow of solution at *C*, the distensibility of cavity *F*, and the amount of fluid necessary to raise the level from *m* to *m'*. The tube in the top of flask *H* must be closed by clamp *O* or connected with a water manometer (fig. 2). Irrigation takes place from the relatively clean upper solution in *H*. The pus settles to the bottom of *H*, passes out to flask *J*, settles out here so that it does not disturb siphon *K*, and can be periodically drained by the release of clamp *P*. Siphon *K* should be of smaller caliber than tube *E* so that drainage from the chest is practically complete before the siphon action of *K* is broken by the entrance of air. The entire system can be drained by clamping tube *E* and opening clamps *O* and *P*, and can be washed out by opening clamp *B* also. In refilling, care must be taken to eliminate all air from tube *I*.

minutes by the nurse assigned to the case. Complete restoration of function was obtained. I have also treated by this method a patient with a lung abscess and one with a subdiaphragmatic abscess. The patient with a lung abscess recovered, while the moribund patient with a subdiaphragmatic abscess died within eight hours after irrigation was started.

TABLE 1.—*Method of Treatment*

Method of Treatment	Number of Patients	Type of Operation: Trocar Thoracotomy	Type of Operation: Rib Resection
Tidal irrigation and closed drainage...	50	48 *	2 *
Open drainage (all small cavities).....	7	7	0

* One other patient had a rib resection on the thirty-fifth day for relief of pain from an exposed intercostal nerve.

Table 1 shows that fifty of the fifty-seven cases of empyema which have come under our care within the past twenty months have been suitable for treatment with tidal irrigation. This simply means that the empy-

* From the Surgical Department of the Johns Hopkins University School of Medicine and Hospital.

* Read before the Section on Surgery, General and Abdominal, at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 12, 1929.

ema cavity was sufficiently large to permit the insertion of a catheter and to allow it to drain without obstruction from kinking or compression between the parietal and the visceral pleura. An analysis of the course of the fifty patients treated by tidal irrigation will be given in this paper. Three of these patients (table 4) had smaller pockets which were treated by simple drainage by means of a tube inserted through a trocar, but this phase of their treatment will not be considered.

AGE

The age of the patients varied from 3 weeks to 50 years, as shown in table 2. The most striking change in the mortality rate has occurred in the group 2 years of age and under. It will be noted that of the thirteen patients in this age group only one died in the hospital,[1] making a mortality rate of 8 per cent (16 per cent if the patient who died after leaving the hospital is counted). This rate compares favorably with the results obtained in this clinic from 1915 to 1928, during which time the mortality rate among patients of this age was 50 per cent when closed drainage was employed, and 29 per cent when rib resection and open drainage were used.[2]

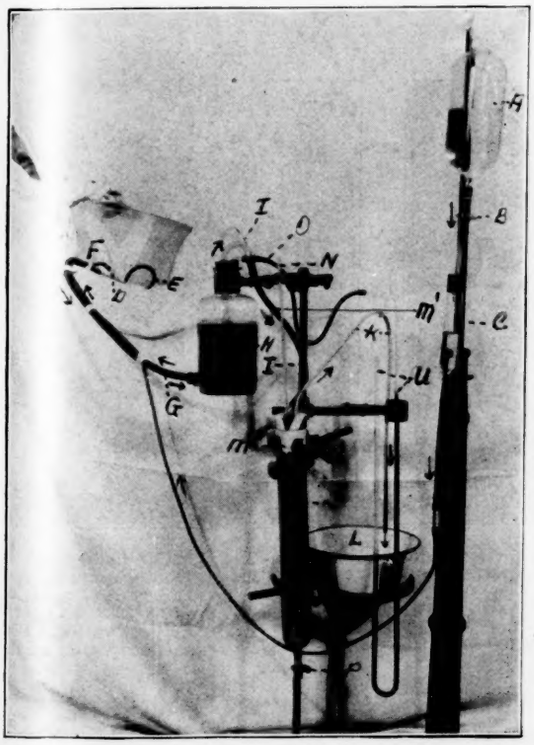

Fig. 2.—Apparatus corresponding to the schematic drawing in figure 1 and connected with a patient, *F*. Tube *I*, however, enters flask *H* through the cork in the top and acts as a siphon, while tube *O* is connected with a water manometer, *U*, which records the amount of suction in flask *H*.

DURATION OF IRRIGATION

Irrigation was considered to be going on up to the time when the irrigation apparatus was removed. This was usually done from four to six days after irrigation had practically stopped. This additional time is necessary in order that the lung may adhere with sufficient firmness to prevent its retraction and a reformation of the cavity when suction is released. From table 2 it will be seen that the duration of irrigation varied from seventeen to thirty days for the different age groups. In general, the older the patient, the longer the irrigation. In each of the last two groups, however, there was one patient who had a long period of irrigation, which made the average time of irrigation greater by several days.

After irrigation was discontinued a small tube was kept in the sinus and gradually withdrawn over a period of six to ten days. When the patient's temperature was elevated as a result of some of the complications listed in table 5, the tube was left in place for a longer time. The average time of healing of the sinus after removal of the tube was five days. No patient developed an abscess or a pocket along the drainage tract. Two patients, however, came back after periods of eight and twelve months, respectively, with a superficial abscess secondary to an osteomyelitis of a rib. In one of these patients the cavity had been drained through a trocar thoracotomy; the other patient had had a rib resection. In both cases the abscess healed when adequate drainage was provided.

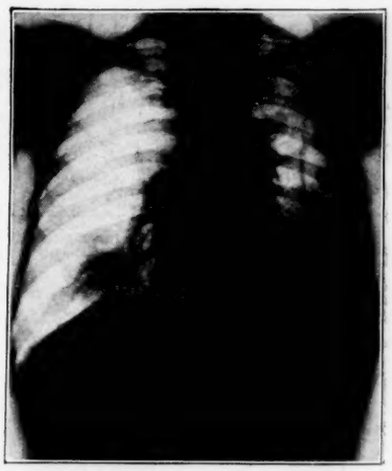

Fig. 3.—Chest of a man, aged 48, with an empyema and bronchial fistula of eight months' duration. This followed pneumonia and was superimposed on a chronic lung infection of twenty-eight years' duration. Injection of iodized oil demonstrated a bronchiectasis.

Leakage around the tube occurred in a fairly high percentage of the children under 3 years of age (table 2) but was rare in older children and was not seen in adults. The leakage usually began about the fourth to the seventh day and seemed to be the result of one or a combination of the following conditions: (1) the thin chest wall of the child; (2) the rapid and wide excursions of the chest wall in a crying child; with a small tube in the chest the fluid could not run out as rapidly as pressure was applied to the contents of the cavity by the forced expiration; (3) obstruction to the openings in the inner end of the tube at the beginning of expiration, so that the expiratory effort forced the

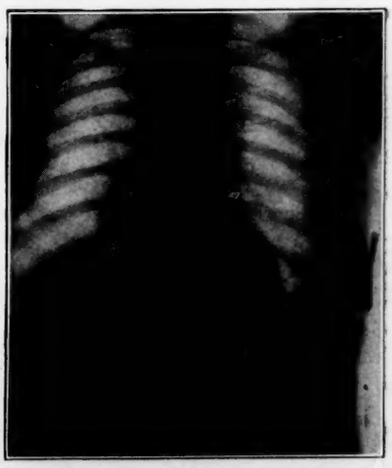

Fig. 4.—Chest of same patient as in figure 3 after sixty-eight days of treatment with tidal irrigation and suction. The bronchial fistula closed within seven days, the cavity, which held several hundred cubic centimeters, closed to a sinus within fifty-three days, and the patient was discharged seventy-two days after treatment was begun, well except for the bronchiectasis.

1. Another died at home after having been taken from the hospital against advice. It is of interest that of the fourteen patients with an empyema caused by a pneumococcus of group IV, this is the only one who died.

2. Rienhoff, W. F., Jr., and Davison, W. C.: Empyema in Infants Under Two Years of Age, Arch. Surg. **17**: 676 (Oct.) 1928.

fluid out around the tube, and (4) absence of suction on the empyema cavity for the first five to eight days. This was left off since we wanted to avoid a too rapid expansion of the lung.

TABLE 2.—*Division of Patients into Age Groups*

Age of Patients	Number of Cases	Number of Deaths	Leakage Around Tube	Duration of Irrigation, Days
Birth to 6 months.....	3	0	2	21
7 months to 2 years....	10	1*	4	18
3 years to 5 years.....	11	2	2	19
6 years to 10 years.....	5	1	1	18
11 years to 15 years.....	5	0	0	18
16 years to 20 years.....	4	0	0	28
21 years to 30 years.....	5	0	0	30
31 years to 50 years.....	7	1	0	30

* Another patient died after removal from the hospital.

When leakage occurred, attempt was made to control it by the following methods: (1) application of suction, and (2) shortening of the catheter when it projected too far within the chest and the inner openings became closed over. At times a mushroom catheter was inserted, and this worked satisfactorily.

In some cases the leakage was ignored, pads being placed beneath the patient to take up the drainage. In all cases the opening in the skin should be sufficiently large to allow the fluid to reach the surface and not be forced out through the tissues.

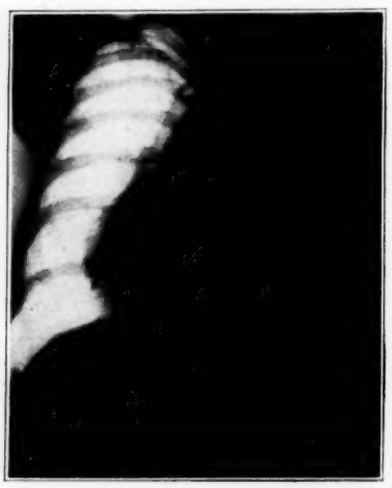

Fig. 5.—Chest of a white youth, aged 20 years, with a tuberculous empyema of thirteen months' duration. He had had eighteen aspirations at about ten-day intervals, but the fluid rapidly reaccumulated.

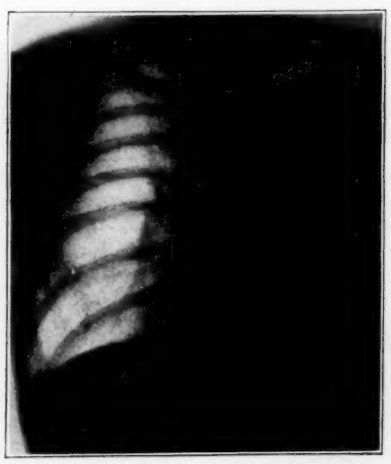

Fig. 6.—Appearance in same patient as figure 5 after eleven weeks of treatment with tidal irrigation and suction. The cavity was distended with air under moderate pressure, so the upper part of the cavity seems to be obliterated by adhesions. With suction the cavity could be diminished somewhat in size. The temperature had remained practically normal and the cavity free from infection.

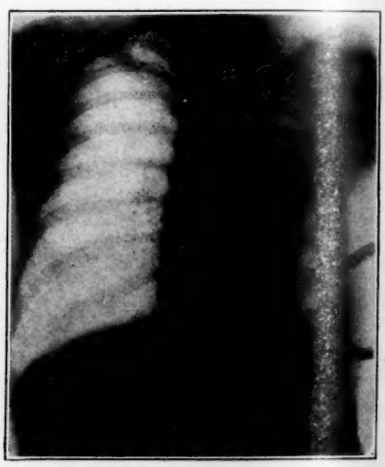

Fig. 7.—Size of cavity three weeks after figure 6. The cavity became secondarily infected when the tube was changed after eleven weeks of irrigation, but this infection has been controlled by the irrigation. If this cavity does not close, the overlying ribs will be resected.

PATHOLOGY

Organisms.—A list of the organisms encountered is given in table 3, which suggests that the type of organism has considerable bearing on the mortality rate. It will be noted that death occurred chiefly among the small group of patients infected with the influenza bacillus, the pneumococcus of type I, or the pneumococcus of type II. The only death among the fourteen patients infected with the pneumococcus of group IV was that of a 9 months' old child, who was taken from the hospital against advice by his uneducated foreign-born parents and died at home. The low mortality rate in the group of staphylococcus and streptococcus cases was somewhat surprising. Of the nine patients infected with *Staphylococcus aureus,* three developed metastatic abscesses and all recovered, while among the twelve infections with a streptococcus the only death was that of a patient who had an overwhelming general infection at the time of operation.

Bilateral Empyema.—Three of the five patients with bilateral empyema were treated by irrigation of both cavities; in the other two the second cavity was small and was discovered only at autopsy. Of the three patients treated, one recovered and another recovered from empyema on the right caused by the hemolytic streptococcus but died as a result of bilateral pneumonia, empyema on the left side and peritonitis, all caused by the pneumococcus type I. The third patient was infected with the pneumococcus type I, was critically ill at the time of operation on the right side, and was in an oxygen tent and practically moribund at the time of operation on the left side five days later. He showed remarkable improvement, however, was out of the oxygen tent, and was well on the way to recovery when an extensive exacerbation of his pneumonia caused his death, seventeen days after the second operation. This case demonstrates that it is possible in a bilateral, acute, massive empyema to adjust the suction so as to permit irrigation and at the same time keep the lungs sufficiently expanded to care for the respi-

TABLE 3.—*Classification of Organisms*

Organism	Number of Cases	Number of Deaths
Pneumococcus		
Type I	5	2
Type II	4	1
Type III	1	0
Group IV	14	1*
Not typed	6	0
Staphylococcus		
Aureus	9	0
Albus	1	0
Citreus	1	0
Streptococcus		
Hemolytic	8	1
Nonhemolytic (Viridans 3)	4	0
Colon bacillus	2	0
Influenza bacillus	1	1
Tubercle bacillus	1	0
Diphtheroids	1	0

* Taken from hospital against advice and died at home.

ratory needs. The remarkable improvement shown also encourages one to continue in attempts to save the patient, regardless of how hopeless his condition may seem to be.

Multiple Pockets.—This condition occurred in a number of patients, but in only three was one or more of the pockets large enough to permit of treatment by tidal irrigation. These cases are most annoying to treat because of the difficulty in locating and draining the individual pockets. By careful physical and roentgen examination, however, one can soon locate and adequately drain all the pockets, and the prognosis is good. Treatment is usually more prolonged than with the cases of massive empyema.

TABLE 4.—*Multiple Operations*

Patient	Condition	Number of Operations
C. W.	Bilateral empyema	2
E. H.	Bilateral empyema	2
D. C.	Bilateral empyema, lung abscess, pericarditis	4
J. M.	Multiple small pockets, pericarditis	4
O. B.	Multiple small pockets	3
C. B.	Multiple small pockets	3
R. H.	Pocket left from too rapid expanson of lung	2
C. L.	Tube not properly inserted to give free irrigation *	2
F. H.	First tube not in cavity	2
J. N.	Rib resection thirty-fifth day for pain from exposed nerve	2
B. D.	Rib resection for drainage in presence of a bronchial fistula and hole in diaphragm †	2

* Possibly passing through edge of cavity.
† Before treatment of bronchial fistula cases by irrigation method was begun.

COMPLICATIONS

The complications not related to the method of treatment were numerous, diverse and often serious; they frequently delayed the discharge of the patient from the hospital, and were the deciding factors in causing death (table 5). It is desirable to call particular attention to the number of cases of bilateral pneumonia, bilateral empyema, pericarditis, septicemia and the wide variety of metastatic infections (table 5). Many of these complications were present at the time of operation and were of such a nature as to seem to make death inevitable (tables 5 and 7). However, five patients with a generalized infection recovered, two of them having an infection caused by a pneumoccoccus of group IV and three with deep-seated metastatic abscesses caused by *Staphylococcus aureus,* which was the etiologic agent in the empyema.

Pericarditis.—There were four patients with pericarditis, in three of whom it was recognized or suspected during life. Two recovered, one after aspiration of 500 cc. of infected fluid, and the other after evacuation of the pus by an open operation but without drainage. In the third patient the pericarditis was suspected just before death and was confirmed by the observations at autopsy, while in the fourth patient it was discovered at autopsy and was only a part of a generalized infection.

There were three types of complications referable to the method of treatment. 1. In two patients the suction was removed too early and the cavity reformed. Irrigation and suction were again started, the temperature promptly dropped to normal, the cavity was soon obliterated and there was quick recovery. 2. In another case, in which suction was applied too rapidly, the cavity was obliterated except for a pocket posteriorly which became walled off from the drainage tube. A second tube was placed in this cavity, too rapid closure of the cavity was prevented, and the patient had an uneventful convalescence. 3. The other complication was osteomyelitis, occurring in three cases. Two of the patients were small children, and the osteomyelitis was discovered on roentgen examination. It was apparently caused by pressure of the tube on the adjacent ribs. The other patient had had a rib resection. In one patient there were never clinical signs of the bone involvement, while the other patients developed superficial abscesses several months later, as has been stated.

Bronchial Fistulas.—One of the most important and striking results obtained by this method of treatment has been the rapid and permanent closure of bronchial fistulas, changing the cases with this complication into simple empyema cases. Three patients with a persistent cough were completely relieved of this symptom of bronchial irritation while still on the operating table. In all the acute cases the fistula closed within an average of forty-eight hours (table 6). In the patient, aged 45, with a bronchiectasis and an empyema and bronchial fistula of eight months' duration, the fistula closed within seven days. The sputum in this case showed an immediate drop from around 400 cc. a day to less than 100 cc. This amount persisted until the time of discharge. The patient considered himself cured, stating that he had always had that much sputum and cough since his compulsory military service as a young man. He refused to stay in the hospital for any further treatment of his bronchiectasis.

In treating empyema in the presence of a bronchial fistula, suction must be applied with sufficient rapidity to keep a continuous flow of air through the fistula into the empyema cavity, or else the pressure in the empyema cavity must be less than the pressure of the air in the lung. This suction soon causes some expansion of the lung, and on this expansion one can base two possible explanations of the closure of the fistula: 1. The distance between the bronchus and the pleural surface becomes greater, the fistulous tract through the lung becomes longer and possibly more tortuous, and thus the chance of its closing is increased. 2. It seems more likely, however, that the lung expands until the

TABLE 5.—*Complications*

	Number of Cases	
Not Referable to Method of Treatment	Recovery	Death *
Bilateral pneumonia	5	4
Chronic basilar pneumonia	2	..
Bronchiectasis and chronic lung infection	2	..
Bilateral empyema	1	4
Multiple small pockets	3	..
Lung abscess	1	..
Pericarditis demonstrated by aspiration, operation or autopsy	2	2
Endocarditis	..	1
Mycotic aneurysm of ascending aorta	..	1
Peritonitis	..	2
Septicemia	2	4
Metastatic abscesses (not included under septicemia)	3	..
Meningitis	..	2
Pyarthrosis	..	1
Bronchial fistula	7	..
Otitis media, bilateral	6	..
Mastoiditis, acute, with operation	1	..
Severe skin infections (impetigo and furunculosis)	3	..
Pyelitis	2	..
Measles	1	..
Mumps	1	..
Pertussis	1	..
Diphtheria (one case with myocarditis)	2	..
Acute intestinal indigestion	1	..
Gunshot wound of abdomen	1	..
Bromide delirium	1	..
Syphilis	4	..
Removed from hospital when critically ill	..	1
Referable to Method of Treatment		
Suction removed too early, with re-formation of cavity	2	..
Suction applied too rapidly, with formation of pocket	1	..
Osteomyelitis of rib	3	..

* Six patients died.

visceral pleura comes into contact with the parietal pleura, when the two adhere and the opening is sealed over. If suction is released too early the fistula may reopen, this being the explanation of the persistence of the fistula for four days in one acute case (table 6).

Chronic Empyema. — Patients with semichronic empyema of several months' to a year's duration and possibly of longer standing can be cured by simple tidal irrigation and suction (figs. 3 and 4). In the very chronic case it seems unlikely that the cavity can be completely obliterated by suction. This, however, should be tried since the gradual but continual pull on the lung may give sufficient expansion to be of functional use and greatly simplify the operation for obliteration of the smaller cavity (figs. 5, 6 and 7). After a thoracoplasty, with mobilization of the flaps of soft parts, it seems to be logical to apply suction and irrigation beneath these flaps in order to bring them into contact with the underlying lung. If the flaps can be sucked against bronchial fistulas, closure of these fistulas should be facilitated.

TABLE 6.—*Bronchial Fistulas*

Age of Patient	Duration of Empyema	Duration of Fistula	Relief of Cough	Time When Fistula Was Known to be Closed*	Duration of Irrigation
2 months	16 days	7 days+	No record	48 hours after operation	20 days
9 months	Acute	?	Immediate	48 hours after operation	35 days
19 months	Acute	?	No record	4 days after operation	15 days
3 years	Acute	?	Immediate	22 hours after operation	17 days
4 years	Several weeks	Several weeks ?	Immediate	48 hours after operation	13 days
26 years	29 days	21 days	No cough (open drainage for 3 weeks)	36 hours after operation	27 days
45 years	8 months	8 months	Immediate improvement (bronchiectasis)	7 days after operation	53 days

* The time given is when examination showed the fistula to be closed, not the exact time of closure.

Tuberculous Empyema.—This is a type of disease with which we have only recently tried this method of treatment. We were sure, from experience with patients with chronic empyema, that we could keep a tube in the chest indefinitely without leakage. Judging from previous experience with drainage tubes in the cisterna magna and with other cerebrospinal fluid fistulas, we hoped that secondary infection of the empyema cavity could be avoided. It was felt that, if this complication could be prevented, the cavity could be obliterated by the powerful action of a few inches of hydrostatic suction within the cavity on every square centimeter of the surface. Obliteration, we hoped, would be effected by expansion of the lung, collapse of the chest wall and elevation of the diaphragm. Finally, if suction alone failed to bring about the desired result, we could still resort to paralysis of the diaphragm and resection of the ribs. With no leakage about the tube, the operative procedure could be carried out with aseptic precautions. After operation, the maximum collapse could be obtained by suction applied within the cavity. This plan was based on the premise that after the pus and the redundant granulations were thoroughly cleaned out by irrigation with saline solution and surgical solution of chlorinated soda the cavity would be obliterated by adhesions if the surfaces were brought into contact; and if the cavity was obliterated the tuberculosis, with proper hygienic care, would probably heal.

A case that began as a pleurisy with effusion was chosen. The duration of the disease was a little more than a year. With repeated aspirations and injections of methylene blue (methylthionine chloride, U. S. P.) over the preceding four months the temperature had fallen to normal. We hoped that the lung would be relatively free from disease but at the same time we planned that, if this was found to be not the case when the lung expanded, a thoracoplasty would be performed. February 12, a tube was inserted in the eighth interspace in the anterior axillary line on the left side. This place was chosen so as to allow some obliteration to occur by the elevation of the diaphragm, while the anterior location would be out of the operative field for a thoracoplasty. The cavity was found to be filled with thick pus, and it had a tidal capacity of more than 1,900 cc. when tapped every ten days. The fluid rapidly reaccumulated, displacing the heart and the mediastinum (fig. 5). After the institution of tidal irrigation and suction the cavity rapidly diminished in size, having a tidal capacity of 500 cc. after three weeks. After eleven weeks there was only the cavity shown in figure 6. This roentgenogram was taken with the cavity filled with air under a moderate pressure, and it demonstrates the obliteration of the upper part of the cavity, while with suction the cavity was reduced in size by one third. Three weeks later roentgen examination showed some further decrease in the size of the cavity (fig. 7).[3]

When treatment was started there was flatness and absence of breath sounds over the entire side. After three weeks the left side of the heart could be outlined by percussion, and breath sounds came through almost down to the base, while, in view of the thickened pleura, there was a fair percussion note over the entire side.

The patient's temperature has remained normal except for a few slight elevations; he has gained weight, and both looks and feels better than before treatment was begun. The lung as it has expanded has remained free from râles, there has been no cough and no pain at the site of the thoracotomy wound, the tube has been changed only once, and at the end of eleven weeks there has not been any leakage. Clean dressings have been applied once a week, at which times the dried secretions from the granulating sinus have usually been found to make a spot smaller than the little finger nail. Each week the skin about the wound is thoroughly cleaned; it is painted with iodine, which is washed off with alcohol, and the skin and the tube are painted with a 1 per cent aqueous solution of dahlia. A flange prevents the tube from working back and forth in the sinus, a motion that might carry infection into the cavity. The cultures from the cavity have been negative, although inoculated guinea-pigs died of tuberculosis.

The eventual usefulness of the method of treatment in this type of case is still to be determined, even though the result with this particular patient has been good beyond our most sanguine expectations. For the usual case of chronic empyema it has proved itself to be quite satisfactory, while in association with a thoracoplasty it will be invaluable in the obliteration of the cavities of very long standing, whether these are secondary to acute or to tuberculous empyema.

RESULTS

Of the fifty-seven patients treated, five died in the hospital and one died after being removed from the

3. If this cavity does not close completely with a continuation of this method of treatment, the overlying ribs will be resected. This will evidently be a much simpler procedure than the collapse of the cavity which was present when the patient came under treatment (fig. 5).

hospital contrary to the advice of the physicians in charge of the case. A study of table 7 shows that three of the five patients who died in the hospital had an incurable complication or an overwhelming infection at the time of operation. Another patient had empyema on the opposite side which had not been recognized or treated, together with septicemia, meningitis and pyarthrosis. The remaining patient, on whom an autopsy was not performed, showed clinical evidence of a fresh pneumonia involving most of both lungs and coming on twenty-one days after drainage of the right and fifteen days after drainage of the left pleural cavity, each time for a massive empyema.

No patient left the hospital with a draining sinus, none developed a chronic empyema, and with the exception of the patients with an abscess of the chest wall secondary to osteomyelitis of the ribs, no patient has had since discharge a complication referable to the empyema or the method of treatment.

Bronchial fistulas close within a few hours' to a few days' time, while the relief of the cough is at times immediate.

No patient has developed chronic empyema, and no patient has been sent out with a draining sinus.

Convalescence has been hastened, there is less thickening of the pleura, and chest deformity is almost unknown. The rapid return to normal occurs without any system of exercises or blowing of bottles.

Complications referable to the method of treatment were rare. Other complications were numerous, diverse, and often multiple.

The organisms were chiefly of the pneumococcus, streptococcus and staphylococcus groups.

For the thirteen children, 2 years of age and under, the hospital mortality rate was 8 per cent [4] as compared with 50 per cent over the preceding fifteen years.

The hospital mortality rate for the fifty patients treated was 10 per cent,[4] but three of the five deaths were due to hopeless complications which were present at the time of operation. The other two deaths were caused by extensive pneumonia and generalized infection.

TABLE 7.—*Analysis of Six Fatal Cases*

Age	Organism	Condition of Patient at Time of Operation	Time of Death After Operation	Condition at Autopsy	
				Local	General
15 months	Influenza bacillus	Critical; bilateral pneumonia	9 days	Clean granulating cavity, 10 cc., left (side treated)	Empyema, right, untreated; bilateral pneumonia; meningitis; pyarthrosis; septicemia
3 years	Pneumococcus type I, left; old empyema, right, hemolytic streptococcus	Moribund	12 hours	Cavity on left contained fibrin and 15 cc. of fluid; old empyema on opposite side healed except for sinus	Bilateral pneumonia; bilateral empyema; pericarditis; peritonitis
10 years	Hemolytic streptococcus	Critical; heavy blood stream infection; symptoms of peritonitis	2 days	Treated empyema cavity practically obliterated	Bilateral empyema; pneumonia; pericarditis; peritonitis
48 years	Pneumococcus type II	Roughened aortic sound suggesting valvular lesion	9 days	Clean granulating cavity, holding 15 cc.	Ulcerative endocarditis with destruction of aortic valves; mycotic aneurysm of ascending aorta; septicemia
				Autopsy Not Obtained	
9 months	Pneumococcus group IV	Critical; bilateral pneumonia	Left hospital 9th day. Died at home	Clinically, extensive bilateral pneumonia	
3 years	Right side, pneumococcus type I; left side, pneumococcus type I	Critical; bilateral pneumonia Moribund	23 days 17 days	Clinically, continuous improvement from time of second operation; two days before death, onset of extensive fresh bilateral pneumonia and rapid downward course to death	

Without any system of exercises, blowing of bottles, and so forth, convalescence has been hastened, the hospital course has been greatly shortened, and the chest has returned to a normal outward appearance in every acute case and in some of the chronic cases. More than 60 per cent of the patients do not show any evidence of thickened pleura.

SUMMARY

The use of tidal irrigation in the treatment of empyema enables the surgeon to use closed drainage, without obstruction of the drainage tube and with negligible leakage around the tube.

Drainage is as good as or better than with a rib resection and open drainage.

Osteomyelitis of the rib is less likely to occur than after a rib resection. Recurring abscesses are, therefore, infrequent.

With a closed system the rate of expansion of the lung can be regulated by the proper use of negative or positive pressure.

Patients with acute streptococcus empyema can be treated by early drainage.

Patients with bilateral massive empyema can be treated by drainage; and sufficient lung expansion can be maintained by the proper adjustment of suction.

Chronic or even tuberculous empyema cavities can be cleaned and obliterated either by irrigation and suction alone or by these in association with paralysis of the diaphragm and thoracoplasty.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BOLAND, GIBSON AND HART

DR. CARL A. HEDBLOM, Chicago: Dr. Boland has had an unusually extensive experience in the treatment of penetrating wounds of the thorax. We may therefore profit much by the lessons which he has drawn. I quite agree with his general conclusions that conservatism is the watchword in treatment. There is a small group of cases, as he also suggests, in which there is fairly active hemorrhage, for which thoracotomy may be life saving. As he stated, hemorrhage is the great danger. I should like to ask Dr. Boland what his observations are as to the late results following massive hemorrhage in which there was blood in the pleural cavity when the patient left the hospital. According to the literature and my own observations there is apt to result in many such cases very extensive thickening of the pleura and cicatricial contracture deformity similar to that in chronic empyema. I was interested in what Dr. Gibson said about the diagnosis of diaphragmatic hernia. Most of the cases I see are of either the congenital or the acquired type at the esophageal hiatus. There is, of course, a considerable group of the total number of diaphragmatic hernias which are traumatic. The symptoms in traumatic hernia will depend largely on the size of the opening and on the hernia contents. I wish there were more time for a discussion of the treatment of empyema. In my opinion the one essen-

4. One patient died after being taken from the hospital against advice.

tial principle in the treatment of empyema is adequate drainage all the time until the empyema cavity is entirely obliterated. If that is accomplished by rib resection or by insertion of a tube and aspiration of the pus or by Gibson's more complicated method, the end-result is the same. I would qualify that statement only as follows: Infancy, old age, an acute streptococcus empyema or a critically ill patient of any age, from any cause, presupposes a low margin of reserve respiratory capacity. In any such case the closed method of drainage is obligatory, in my estimation, during the early acute stages. Generally speaking, my own inclination has always been in the direction of simplification of technical methods. Most of us, I think, are not able to command the necessary trained assistants to carry on successfully a more or less complicated method. Unless one can command trained assistants at all times, the simple closed method of syringe aspiration and irrigation is likely, in my estimation, to give as good results as this more complicated method, or even better.

DR. FRANK S. DOLLEY, Los Angeles: Complete and absolute rest following a penetrating chest injury is of the greatest importance. It is often best not even to undress the patient for several days. Even the taking of the history may cause too much disturbance. If he is coughing, the patient should be kept flat so that expectoration may thus be easier. Never should morphine be given in doses large enough to stop the coughing reflex, since retained blood in a bronchus, as a rule, greatly increases the danger of bronchopneumonia. As regards operative treatment, there are two complications that demand immediate surgical attention and probably only two: hemorrhage and tension or pressure pneumothorax. Evidence of continued intrathoracic bleeding often demands, to be life saving, an emergency operation. After locating the wound, one should determine the probable vessel injured. It is seldom that injury to the lung alone results in fatal hemorrhage unless a vessel at the hilum is injured. Not infrequently the lung is so injured that air with inspiration passes through a perforation into the pleural space, so called, but with expiration cannot escape on account of the falling together of the lung tissue at the site of perforation. Thus the amount of air between the pleural leaves gradually increases, the pressure rises, the lung becomes more and more collapsed and if the mediastinum is not well fixed, the latter is displaced into the other side of the chest and the contralateral lung, in turn, is reduced in size. Gradually, unless relief is afforded, death follows from actual reduction in respiratory breathing surface. While aspiration of the air by needle affords immediate relief, this relief is only momentary. Inserting a tube between the ribs and instituting constant aspiration of air may be sufficient; yet the cause is not removed. Frequently empyema or pleural sepsis follows and the patient's life is greatly endangered. It is without question much better in the presence of tension pneumothorax, following a penetrating wound of the thorax, to open the chest, find the lung perforation and repair it, while the wound is yet clean, than to temporize until infection has taken place.

DR. J. R. COFFEY, Portland, Ore.: The surgical treatment of penetrating wounds of the chest wall, although to some extent dating back to the Napoleonic wars, was not extensively practiced until the Civil War. During the Crimean, the Civil and the Franco-Prussian wars some rather radical chest surgery was employed. In the Boer War it was found that in the high, dry climate, in a country scantily populated, little infection followed the penetrating wounds of the chest wall. From the results of the successful expectant treatment in cases of penetrating wounds of the chest wall during the Boer War, the army surgeons treated penetrating wounds expectantly in the early part of the World War. However, in France and Belgium, so densely populated for centuries, where the soil of the country was alive with pathogenic organisms, the situation was different. The climate was damp. The soil was soggy. Infection followed nearly every penetrating wound of the chest wall, and the war was still young when the misconceptions that the thorax could not be safely opened without the aid of a pressure chamber, and that excessive bleeding followed manipulation of the lung, were corrected and early radical surgery was adopted. This radicalism survived the war in the minds of many as the proper treatment of all intrapleural wounds. Dr. Boland reports a previously unheard-of number of cases in the experience of one man in civil life. He comes from a warm, sunny climate, reporting cases mostly in negroes, with a high immunity to their surrounding organisms. Dr. Boland's experience is indisputably in favor of expectant treatment in his locality among this class of patients. We therefore have a new consideration which involves the locality in which the injury was sustained, as regards climate and population, and the race and factors of immunity of the patient. Given the same injury under different conditions, these factors must influence the choice between surgical and expectant treatment. My own opinion favors the expectant treatment in civil life.

DR. PHILEMON E. TRUESDALE, Fall River, Mass.: That Dr. Gibson has made the correct clinical diagnosis in three cases of diaphragmatic hernia by physical examination is credible. It goes to show that this condition should be kept in mind at the time of the examination if the examiner expects to make the diagnosis. In those cases shown on the screen by Dr. Gibson, the stab wound was near the perimeter of the diaphragm and the colon entered the pleural cavity. He made a transthoracic approach to reduce the hernia, and saved his patient. These cases are not strangulated hernia in the sense that the blood supply is shut off. They are obstructed hernia. In other types of hernia, such as inguinal and umbilical, there is no elasticity in the ring to permit the return circulation, while in hernia of the diaphragm there is sufficient elasticity in the edges of the aperture to permit a free current of blood to and from the herniated viscera. Intestinal obstruction takes place by virtue of the inspissated contents in the transverse colon. If the obstruction has been of a severe type and the patient is in rather poor condition, it seems wise to do a cecostomy for the purpose of bridging a crisis. Later the major operation of repair can be done with a much smaller risk. The film in which the chest was almost filled by the dilated stomach was impressive. There is a fair probability that patients in this condition die from asphyxia, because the left lung is collapsed, the right lung compressed, and the heart pushed well over to the right side by the enormous stomach. Acute dilatation of the stomach when it is in the abdomen is bad enough, but in the thoracic cavity it must necessarily carry a great risk of death from asphyxia. When asphyxia cannot be relieved by posture, the stomach tube may be used to advantage. As to phrenicotomy, it would be just as unfortunate to say that phrenicotomy should never be done as it would be regrettable not to do it when it is necessary. The evidence should be weighed on both sides, and when phrenicotomy is indicated it should be done. But there should be kept in mind what happens when it is done: that the nerve does not regenerate nor is it ever repaired.

DR. HAROLD BRUNN, San Francisco: Dr. Boland's series of cases is probably one of the largest in civil practice on injuries to the chest, and I must compliment him on his remarkable immediate results. Recently we checked over our cases at the San Francisco Hospital for the past ten years. There were 145; fifty-six of these were not considered because absolute penetration of the lung could not be determined, leaving a total of eighty-nine cases. Sixteen patients died. The early deaths (nine) took place within twenty-four hours—the only exception to this occurred within forty-eight hours. Of the seven late deaths, three were due to other complicating wounds (abdominal in two cases and spinal in the third). There remain four cases in which death resulted after the opportunity for treatment had been afforded. Thus there is a late mortality of 8 per cent, and this is reduced to 4.5 per cent if the three complicated cases are subtracted. We noted that empyema did not occur after numerous tappings as one might expect. We noted also that patients who were tapped the most were free from empyema. At the present time we have adopted certain indications for treatment: First, large open wounds of the chest are indications for immediate operation. Small open wounds should be immediately closed. Retained foreign bodies do not indicate surgery unless they are large. Extensive rib fractures practically always terminate in infection and should be operated on early. In those cases in which conservative and expectant treatment is carried out, we believe that better results will be obtained by the removal of blood from the chest so far as possible, and the substitution of air in its place for compression. Fluid alone does not induce

complete lung collapse and immobility unless the chest is completely filled with fluid. We have found a thickened pleura in hemothorax more difficult to deal with than that following empyema. Expansion of the lung is much more uncertain and thoracoplasty is often required. By inserting air in the pleural cavity and keeping the cavity as clear as possible of blood, many advantages accrue. By the method of withdrawing the fluid from the chest and replacing it by air with the pneumothorax machine, we prevent hemorrhage, reduce to a minimum future complications, prevent adhesions and, finally, obtain better future results.

DR. OWEN H. WANGENSTEEN, Minneapolis: Dr. Hedblom has rightly pointed out that the most frequent variety of diaphragmatic hernia is the so-called para-esophageal. This hernia is most easily recognized by placing the patient in the horizontal position on the fluoroscopic table. When barium is then administered the hernial pouch is most easily brought into prominence, because the protruding viscus is usually the stomach. The relative frequency of para-esophageal hernia is attested by the fact that our roentgenologist, Dr. Rigler, at the University Hospital in Minneapolis, has within the last year discovered sixteen such cases. Three of these patients have been operated on. Para-esophageal hernia occurs not infrequently in patients who have marked increase of intra-abdominal pressure. For instance, one such patient came because of a large ovarian cyst. She also complained of pain in the upper abdomen. Examination of the gallbladder by the usual cholecystographic technic was negative. A barium study of the stomach and duodenum was negative; then, as is his custom in such instances, Dr. Rigler placed the patient in the supine position and on inclining the fluoroscopic table to the left found a para-esophageal hernia. Many of these patients do not need operation, but when there is obstruction in the pouch operation is necessary. There is just one point in the surgery of this type of hernia that I should like to mention. While I was at Newcastle about a year ago, Mr. George Grey-Turner pointed out to me a very splendid maneuver to gain access to the upper abdomen. As will be recalled, the left lobe of the liver comes across the subdiaphragmatic portion of the esophagus as a tongue-shaped projection from the right lobe of the liver and acquires attachment to the diaphragm through the triangular ligament of the liver. This avascular suspensory ligament may be divided and the left lobe of the liver may then with extreme ease be pulled toward the right, bringing the subdiaphragmatic portion of the esophagus into direct view. After reduction of the viscus that is engaged in the hernial orifice, it is a good plan to pass a stomach tube down the esophagus to determine how much the hernial orifice should be narrowed by the sutures. It has been our practice also to suture the anterior wall of the stomach to the anterior parietal peritoneum in such manner that this viscus could not easily reengage itself into the hernial orifice.

DR. H. E. SCHIFFBAUER, Los Angeles: I wish to compliment Dr. Boland on having only four empyemas in 341 cases. As to the conservative handling of hemothorax, these patients must be kept very quiet with the utmost restriction of movement from bed to stretcher or to x-ray table. Massive hemothorax, besides conservative handling, needs watchful care. That watchful care is given not by the nurse but by the physician. The physician must stay at the bedside of the patient, check the hemoglobin and red cells constantly and also the blood pressure. If the blood pressure continues to fall, with a constant decrease of hemoglobin and red cells, it probably would be advisable to do an open thoracotomy under local anesthesia, control the bleeding coming from the lung, and also give a transfusion on the table. Some of these patients can be saved by this method. With reference to massive hemothorax, the deferred aspiration is of extreme value, aspiration being done only in those cases in which cyanosis and respiratory difficulty have developed; but after that time, when the patient has passed the crisis, it is probably advantageous to do an open thoracotomy, remove the massive blood and the blood clot, and with positive pressure reinflate the lung and close the wound without drainage. With reference to empyema the treatment, stated consecutively, is: evacuation of pus; sterilization of the cavity, and obliteration of the cavity. As to evacuation of pus in a small cavity, it can be removed by aspiration with or without the injection of dyes. Some of these cases will heal without any further operative procedure. The closed method is of extreme value. Dr. Hart's method no doubt is of extreme value in institutional treatment and especially in the treatment of chronic empyema with reference to further operative procedure. Drainage should not be stopped until positive evidence is obtained that the cavity is obliterated. In aspiration of pleural cavities in which pus has been obtained, one should never remove a needle from an infected pleural cavity without first injecting a dye through the needle and depositing some of that dye in the needle tract. I have seen three cases of diffuse cellulitis develop from removal of a needle which was not previously injected with a dye, the pus having been deposited in the cellular tissues, resulting in a cellulitis.

DR. FRANK K. BOLAND, Atlanta, Ga.: With regard to Dr. Hedblom's question, it is true that thickening of the pleura and adhesions result from these massive hemorrhages in the pleural sac.

DR. FRANK S. GIBSON, Cleveland: My purpose in my paper was to bring forward some of the symptoms and signs of diaphragmatic hernia during acute obstruction, so that the condition might be diagnosed prior to laparotomy incision. It is true that in these cases the approach is much easier by way of the thoracic wound. For that reason I feel, in answer to Dr. Wangensteen, that we should always in cases of acute obstruction in which there is a history of a predisposing injury consider the question of diaphragmatic hernia. In accord with Dr. Hedblom, I believe that the size of the orifice of the hernia influences the symptoms in these cases. However, in the third case which was presented there was a hernial orifice 12 cm. long extending directly across the dome of the diaphragm. In reply to Dr. Truesdale, that case also was not an esophageal hernia. The orifice began 3 cm. down from the esophageal hiatus. Death in that case, I believe, was due to circulatory collapse. The question was thoroughly discussed in my paper. In that instance it may have been possible to get the esophageal tube down into the stomach, but the lower end of the esophagus was also obstructed, as was evidenced by the fact that this man had not been vomiting, and had been unable to take anything for four days.

DR. DERYL HART, Baltimore: The apparatus can be very simple, consisting of a flask with a vent at the bottom, to which is connected the tube that drains the empyema cavity. This gives adequate irrigation, provided the tube is not too long, and as long as the connections are air-tight, suction can be obtained by lowering the flask below the level of the empyema cavity. The apparatus appears more complicated since provision is made to empty and refill the flask, and apply the desired amount of suction to the contents of the flask while keeping it on a level with the empyema cavity. This, after it is once in operation, is easier to handle than the single flask. The care of the patient is simpler than with the methods of irrigation with a syringe; the irrigation is continuous instead of intermittent; the hands of attendants do not come in contact with infected material; the tube does not become obstructed; dressings are dispensed with, and fluid is not forced into and does not accumulate in the chest under pressure, so that leakage about the tube and chest wall infections do not occur. Sixty per cent of the patients were not dressed for the first month except when irrigations were discontinued after the cavity was obliterated; the hospital course of the patients was markedly shortened as the charts will demonstrate, and no patient developed a chronic empyema or left the hospital with a draining sinus. A chronic empyema of eight months' standing complicated by a bronchial fistula was cured within less than seventy days. In a case of tuberculous empyema eleven weeks elapsed before the tube was changed, and for the sixteen weeks since operation there has been no leakage. No cavity can be drained more perfectly than the one whose walls are bathed with a clean, nonirritating and nontoxic solution under less than atmospheric pressure and with a free opening to the exterior. Cellulitis of the chest wall usually occurs as a result of extravasation of pus through a puncture wound in the pleura. A needle or trocar should not be removed from the empyema cavity until all pressure has been relieved, and a free opening made for the escape of fluid when the patient strains or coughs. No patient in our series handled in this way has developed a cellulitis.

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SATURDAY, NOVEMBER 30, 1929

THE DISTRIBUTION OF IODINE IN RELATION TO GOITER

Several theses have been established as an outcome of the extensive studies of goiter in many parts of the world. The foremost is that the disease is due to a deficiency of iodine. The treatment of goiter is admittedly unsatisfactory, so that the main duty lies in the direction of preventive medicine. It has been predicted by Kimball that within another generation there will be no endemic goiter problem. If this is to be realized, knowledge regarding the distribution of iodine in nature must be enlarged so that unsuspected deficiencies in the supply or utilization of the element can be rationally averted in every civilized country to the advantage of the domestic animals as well as of man.

It has been an alluring assumption that iodine, like chlorine, is wafted inland in the form of spray from the halogen-containing oceans and that thus these elements are distributed over the land to find their way into the soils, their vegetation and the potable surface waters. A correlation between the incidence of goiter and low content of iodine in the surface waters has been demonstrated for many regions by McClendon and Williams.[1] The more frequent occurrence of goiter in inland regions, and its comparative infrequency near the sea, harmonizes with the view referred to. It has been ascertained that vegetable foods show noteworthy variations in their iodine content. To a certain extent, these correspond with the distance from the seaboard. There are sufficient contradictory observations, however, to indicate that other factors must play a decisive part in the varying distribution of iodine.

It is alleged that, even if inorganic compounds of iodine are efficiently utilized in the body, water alone cannot supply the requirement in more than a restricted area. Remington, Culp and von Kolnitz [2] have pointed out that the salt spray theory of iodine distribution seems to have gained general acceptance but that the Atlantic Ocean contains only twenty-three parts per billion of iodine, and five or six parts per billion in the water of streams cannot come solely from spray unless the waters contain a like proportion of the other salts of the sea, which they do not. As for foods grown on land, in South Carolina there is a tendency to higher iodine content in that part of the state which is more distant from the coast and nearer the Blue Ridge of the Appalachian Mountains. It has been suggested, therefore, that the main source of iodine in the vegetation of this region lies in the disintegration of the granitic rocks of the Blue Ridge, and that this has been supplemented by the liberal use of commercial fertilizers over a period of years. This supply of iodine is being conserved by the return of vegetable matter and animal wastes to the soil. Remington and his colleagues point out that average values for iodine increase progressively from the sea to the Appalachian Mountains, but the relative amount of clay in the soil increases in the same manner. It is suggested that the principal source of the iodine is from the disintegration of granite rocks, supplemented by the use of commercial fertilizers. The immediate influence of the sea is not seen beyond a narrow belt along the coast. For the requisite protection against endemic goiter, therefore, dependence should no longer be placed as a safe guide on potable water alone or on the analyses of water supplies. The intelligent selection of foods of known origin may assume a rôle as an additional dietary protection.

1. McClendon, J. F., and Williams, Agnes: Simple Goiter as a Result of Iodine Deficiency, J. A. M. A. **80**: 600 (March 3) 1923.
2. Remington, R. E.; Culp, F. B., and von Kolnitz, H.: The Potato as an Index of Iodine Distribution, J. Am. Chem. Soc. **51**: 2942 (Oct.) 1929.

VENTILATION AND HEALTH

The tendency for the population to concentrate in cities and great buildings has brought many problems, not the least of which are those dealing with ventilation. While the necessity of a pure air supply has long been appreciated, only recently, as a result of much research in science and engineering, have the fundamental requirements of ventilation been demonstrated and suitable means for the practical use of these principles developed. From first hand experience as well as from such tales as that of the Black Hole of Calcutta, it is well known that life soon becomes impossible in a sealed room. Obviously, some circumstance connected with metabolism is responsible for the vitiation of the atmosphere; the removal of oxygen and the production of carbon dioxide seem to be the most likely causes of the phenomenon. It has been shown that the carbon dioxide concentration of air can reach 2 per cent, fifty times that of outdoor air, without causing untoward effects. While this concentration of carbon dioxide is without physiologic effect, Frederick [1] has pointed out that it serves the useful purpose of indicat-

1. Frederick, R. C.: Ventilation Conditions—Normal and Abnormal, and Their Investigation, Inst. of Chemistry of Great Britain and Ireland, 1929.

ing the need for ventilation. Again, a decrease in the oxygen of the atmosphere, while undoubtedly occurring in poorly ventilated places, is of small absolute magnitude and has been shown to be relatively unimportant as a factor in the vitiation of air. Moreover, while the body odors in a poorly ventilated room are disagreeable and may even be nauseating, experiments have shown that this is not the primary factor concerned. Modern studies in ventilation have demonstrated that the physical condition of the air is a more important consideration in determining physical comfort than is the chemical composition.

As early as 1883 it was definitely stated that the temperature and humidity are the most important fundamental factors in efficient ventilation. Experimental studies have shown that, whereas physical and mental exertion were unaffected by a carbon dioxide content of from 1 to 1.5 per cent and a correspondingly lowered oxygen tension, provided the temperature and the humidity were kept low, obvious discomfort was experienced by men in a room of fairly high temperature and relative humidity in spite of the fact that they breathed pure air from the outside. The favorable action of ventilation appears to be almost entirely on the temperature equilibrium of the body. Heat is produced by chemical reactions in the cells but lost through physical means, largely from the body surface. About 73 per cent of the heat is dissipated by radiation and conduction and some 15 per cent by evaporation. Therefore, any circumstance which interferes with the heat loss through these channels will, by disturbing the heat equilibrium, produce discomfort through heat retention. The temperature and the moisture content of the air thus assume great importance in ventilation problems. The power of the air to induce evaporation from the moist surface of the skin is further enhanced by the rate of movement, and modern ventilation installations are fitted not only to adjust the temperature and humidity but also to move the air by means of fans and blowers. The cost of such apparatus and the search for improvement in the details of construction have led to repeated investigations in the comparison of the efficiency and desirability of such ventilating systems.

The opportunity for making comparative studies on ventilation in a satisfactory manner under controlled conditions is offered in the schools. In 1926-1927 the New York Commission on Ventilation carried out a study [2] of the relative desirability of the latest types of plenum ventilation as compared with natural ventilation with open windows and furnace ducts in some of the public schools in Syracuse. The incidence of respiratory diseases in the school children in rooms naturally ventilated was little more than half that in the rooms with pressure ventilation. The report of a subsequent study [3] by the same commission has recently been made. Three public schools in the Bellevue-Yorkville District in New York City were used for this investigation, which was designed to determine the effect of rate of air change and also to compare unit ventilation with window ventilation. In each school, five pairs of rooms ranging from the second to the sixth grade with approximately the same distribution of age, sex and nationality were examined. In one room of each pair in two of the schools the motor was slowed so that the rate of flow of air was half that in the other room of the pair. In the third school, one room of a pair was ventilated through the windows and the other by a unit operated by a motor but with the air flow approximately the same as that in the naturally ventilated rooms. The health of the pupils as indicated by the incidence of respiratory diseases was used as a criterion of efficiency of the various modes of ventilation.

The large numbers of pupils studied permitted statistical analysis of the results. The variables were the rate of air movement, temperature and moisture; and it appears that the observations made by the teachers, engineers and school nurses were reliable. The results are variable, at times favoring the slow movement of air, at times the more rapid movement. It is impossible to conclude, on the basis of the observations, that the health of the pupils was favored by one rate of change more than by the other. Likewise the method of unit ventilation seemed no better and no worse than window ventilation except in one instance: there was a significantly lower absence due to illness other than respiratory ailments in the rooms with window ventilation than in the rooms with unit mechanical ventilation. It is stated that, since the "difference in attendance rate is affected but 0.3 per cent, . . . this isolated finding should be confirmed before it is made the basis of a school ventilation program." In view of the former finding of the commission, the results here discussed are somewhat confusing. The care of planning and executing the investigation does, however, give weight to the results, however inconclusive they may seem to be.

From the reports of the commission it appears that the health of pupils in the grade schools is at least as favorably influenced by old fashioned window ventilation and air ducts as by the newer types of pressure ventilation. It follows, likewise, that much of the expenditure for elaborate installations of ventilating machinery is futile. However, in both reports there is the repeated statement of apprehension of the adequacy of the criteria employed for judging whether or not one type of ventilation is superior to the other. Moreover, the children are in school a relatively small part of each day and the controlled observations of teachers and school nurses, no matter how accurately made, apply therefore to a minor part of the daily environment of the child. These conditions help to interpret

2. Duffield, T. J.: J. Am. Soc. Heat. & Vent. Engineers **34**: 327, 1928.

3. The School Ventilation Study in the Bellevue-Yorkville District of New York City, New York Commission on Ventilation, 1929.

the observations and, perhaps, to temper the startling conclusions. The whole question of the advisability of artificial ventilation for public buildings still merits extended scientific study as to its bearing on health.

ADDISON'S DISEASE AND TUBERCULOSIS OF THE SUPRARENAL GLANDS

Chronic suprarenal insufficiency, still rated a rare disease, was first described by Addison about three fourths of a century ago. For many years following his delineation of the group of symptoms that are now commonly designated by his name, the suprarenal involvement in the malady was necessarily discussed in general terms. Not until many years later, in 1894, did the hormone physiology of the suprarenal organs begin to attain some specific significance through the discovery, in the medullary portions, of an active pressor principle that subsequently was identified as epinephrine. Brown-Séquard had, it is true, found that surgical removal of the suprarenals from animals is invariably and rapidly fatal. Recent observations,[1] however, have made it more than probable that the cortex rather than the medullary portion of the suprarenals is essential for life, the medullary hormone playing an emergency or fortifying part rather than an indispensable one in the economy.

Consequently, pathologists have developed renewed interest and a somewhat modified outlook on the morbid anatomy of the glands which is characteristic of Addison's disease. It has long been known that the destructive factor in many cases is a tuberculous process in the indispensable capsules. To what extent other disintegrating involvements, such as neoplasms, might be responsible for the decline of suprarenal function has not been so clear. Barker[2] of Rochester, Minn., has recently studied the postmortem observations in twenty-eight cases from the Mayo Clinic. Among these there was bilateral tuberculosis of the suprarenal glands in twenty-five; acid-fast bacilli were demonstrated in eleven of these cases. There was advanced bilateral suprarenal atrophy in three cases. In all the cases but one, some suprarenal tissue remained; the maximal amount remaining in any one case was approximately 10 per cent of the normal. Healed tuberculous lesions of the lungs were found in all the cases in which there was tuberculosis of the suprarenal glands. Active tuberculosis of other organs was found in twenty-two of these.

This striking frequency of tuberculosis as the injurious feature calls for serious consideration. One might well expect that other degenerative forces would more frequently be encountered, in view of what is experienced in other comparably fatal diseases. Barker points out, however, that possibly the reasons why neoplastic lesions produce Addison's disease so rarely are that the patient rarely lives long enough to have tumors in both glands and, if he does, the primary disease or metastasis to other vital organs causes death before the suprarenal tumors have grown large enough to destroy much suprarenal tissue. It is evident, he adds, that although malignant tumors are invasive they are not nearly so destructive to highly specialized glandular tissue as is tuberculosis. The outlook for relief from the devastating asthenic consequences of such tuberculous invasion has been rendered somewhat more encouraging through the tentative indications, in the experiments of Stewart, Rogoff and others, that replacement therapy may become a reality. At any rate the published records of the potency of extracts of the suprarenal cortex offer a ray of hope which was lacking so long as the medullary constituents overshadowed all other factors under consideration.

1. A Hormone of the Suprarenal Cortex, editorial, J. A. M. A. **89**: 1785 (Nov. 19) 1927; the Suprarenals and Blood Pressure, ibid. **90**: 771 (March 10) 1928; The Medulliadrenal Secretion, ibid. **90**: 1381 (April 28) 1928; The Hormone of the Suprarenal Cortex, ibid. **91**: 1376 (Nov. 3) 1928.

2. Barker, N. W.: The Pathologic Anatomy in Twenty-Eight Cases of Addison's Disease, Arch. Path. **8**: 432 (Sept.) 1929.

Current Comment

AJINOMOTO

Whenever protein is eaten, it is hydrolyzed by the digestive juices and a mixture of some twenty amino-acids is produced and subsequently absorbed. In spite of the fact that this is a familiar biochemical reaction so common as to excite little notice, the laboratory production of pure crystalline amino-acids is accomplished only with difficulty, so that these compounds are listed as rare chemicals and are usually found only in research laboratories. Recently[1] attention has been called again to the fact that the acid sodium salt of glutamic acid, an amino-acid occurring in proteins, is made in large quantities for food purposes in the orient. It was discovered in Japan that this salt has a decided meatlike taste. The use of meat in the diet is condemned by Buddhists and, instead, shavings of dried fish were added to many of the Japanese dishes to improve the flavor. With the advent of monosodium glutamate in commerce, this condiment is said to have become as common in Japanese cookery as was salt or sugar. It is called "Ajinomoto," or "the element of taste." The Chinese have become large users of this material, the great number of vegetarians among them creating a demand for it. This condiment has also been used to displace the more expensive chicken and meat extract formerly used to impart taste to their dishes. Monosodium glutamate is made by hydrolyzing gluten or soy bean by hydrochloric or sulphuric acid. The manufacture began in China about eight years ago and Han states that the value of this chemical made in China in 1928 was $630,000 and that $500,000 worth more was imported from Japan. The export of this material from China to the Philippines, Dutch East Indies and Singapore has become a trade of considerable magnitude. While the cost of glutamic acid in this country

1. Han J. E. S.: J. Indust. & Engin. Chem. **21**: 984, 1929.

is about $15 for 100 Gm., the price of Ajinomoto is from $2 to $3 a pound. The exigencies of religion, of racial food habits and of economics have transformed what in this country is a rare chemical to a common article of food among the oriental nations.

PURIFIED BACTERIOPHAGE

Ordinary bacteriophage is a grossly contaminated mixture of the specific lytic principle with culture medium, bacterial secretions, bacterial autolysate, and 'phage-denatured bacterial proteins.[1] It is, therefore, poorly adapted to critical experimental and clinical work. The currently reported purification and apparent concentration of crude bacteriophage, therefore, is of distinct therapeutic interest. Krueger and Tamada [2] of Stanford University, Calif., applying some of the newer physicochemical methods, have apparently succeeded in freeing bacteriophage from practically all contaminating proteins. They obtained a 'phage apparently a billion times richer in lytic particles than their initial crude product. The Krueger-Tamada purified and concentrated 'phage is readily prepared by any competent laboratory technician. It is, however, less stable than unpurified bacteriophage, and is, therefore, perhaps fortunately, poorly adapted to commercialization.

CHANGE IN VOLUME OF THE LIVER

As interest in function becomes broader and as technical procedures are refined, one is confronted with the necessity of readjusting one's ideas of the physiology of various organs and systems. The newer applications of chemical analysis for inorganic constituents in blood and bone have demonstrated that the skeleton is a readily available source of calcium and phosphorus; rather than a structural framework of fixed composition, the bones are now considered to be a mobile store of these essential mineral salts. The liver likewise has assumed new importance through recent studies in physiologic chemistry. The secretion of bile, the synthesis of glycogen, the formation of urea and the deaminization of amino-acids are functions that are known to be carried out by the hepatic tissue. Recent investigations of the volume of the liver by Mattson [3] have emphasized another activity of this organ under certain conditions. By skilful surgical means the large left lateral lobe of the liver of the dog was encased in a specially made plethysmograph and, after complete recovery, tracings were made of the changes in volume of the liver. It was observed that any action exciting emotion in the dog, such as sudden noise or the approach of a person, was followed by a decrease in the volume of the liver. Intravenous administration of epinephrine invariably produced a rapid and pronounced decrease in size, and the same is true of chloroform. Intravenous injection of dextrose and levulose caused an increase in the size of the liver. Vomiting was accompanied by a marked increase in volume. Mattson points out that the right auricle, the vena cava and the hepatic, innominate, renal and iliac veins form a large venous reservoir into which a considerable volume of blood can be dammed back as, for instance, in vomiting. Moreover, definite vasomotor activity in the liver has been demonstrated, a fact which enables one to reconcile the observed changes in size of this organ with various emotional states. "Accumulating evidence is leaving less support for the view that the liver is a passive sluice for portal blood." Depending on conditions, the blood-containing capacity of the liver can be either increased or made smaller and the large size of the organ renders the absolute effect of this action of considerable importance in the regulation of blood volume.

1. Jungblut, C. W., and Schultz, E. W.: Studies in the Sensitizing Properties of Bacteriophage, J. Exper. Med. **49**: 127 (Feb.) 1929.
2. Krueger, A. P., and Tamada, H. T.: The Preparation of Relatively Pure Bacteriophage, J. Gen. Physiol., Nov. 20, 1929.
3. Mattson, Hamline: Am. J. Physiol. **90**: 146 (Sept.) 1929.

THE IMMUNOLOGIC ENDOCRINE

Assuming that specific "antibodies" are secreted into the blood from certain organs or fixed tissues of the body, immunologists have long sought to identify the essential immunologic endocrine. Thus far an organ has not been found whose surgical removal or toxic destruction materially reduces subsequent antibody production. The tentative conclusion has therefore been drawn that the antibody-producing tissues are widely distributed throughout the body, possibly being such generalized structures as the capillary and lymphatic endothelium and other reticulo-endothelial cells. Evidence in support of this conclusion has been obtained from the reported production of traces of specific antibodies in artificial tissue cultures. More convincing evidence has come from the application of the method of endothelial blockade. If india ink, for example, is injected intravenously into intact animals, the capillary endothelium is mechanically filled with phagocyted carbon particles and is presumably greatly embarrassed in its biochemical function. Animals in which such blockades have been established can produce specific antibodies, but so slowly and in such low titers as to convince many investigators that the capillary endothelium is the main immunologic endocrine. Additional evidence in support of this conclusion has just been published by Boone [1] of Stanford University, who has studied the effects of endothelial blockade on the parenteral denaturization of foreign proteins, under the assumption that parenteral denaturization is the initial step in antibody synthesis. If horse proteins, for example, are injected intravenously into normal dogs, they are so thoroughly affected by the end of four days that they give no recognizable anaphylactic phenomena on massive blood transfusions into horse-protein hypersensitive recipients.[2] Boone reports that, in dogs whose endothelial systems are blockaded, little or no parenteral caninization of horse proteins is demonstrable during the first six days, and that even at the end of fourteen days approximately an eighth of the injected horse protein dose remains anaphylactically unchanged.

1. Boone, T. H.: Effect of Endothelial Blockade on the Rate of Parenteral Denaturization of Foreign Proteins, Proc. Soc. Exper. Biol. & Med., November, 1929.
2. Manwaring, W. H., and others: Normal and Anaphylactic Detoxication of Specific Foreign Proteins, J. Immunol. **13**: 357 (May) 1927.

Association News

ABSTRACT OF MINUTES OF MEETINGS OF BOARD OF TRUSTEES HELD IN CHICAGO, NOV. 14 AND 15, 1929

Meetings of the Board of Trustees were held in Chicago, Thursday and Friday, November 14 and 15.

The minutes of the meetings of the Board held September 19 and 20 were approved.

MEDAL FOR EX-PRESIDENTS

Arrangements were completed for the preparation of gold medals to be presented to past presidents of the Association. The presentation will take place during the Detroit Session, and it is hoped that as many of the ex-presidents as possible will attend to receive their medals.

ELECTION OF DR. FETTEROLF TO EDITORIAL BOARD OF ARCHIVES OF OTOLARYNGOLOGY

Dr. George Fetterolf of Philadelphia was elected to membership on the editorial board of the *Archives of Otolaryngology*, to succeed Dr. Sluder (deceased).

ADDITIONS TO COMMITTEE TO COOPERATE WITH AMERICAN BAR ASSOCIATION

Dr. William J. Stapleton, Jr., Detroit, and Dr. Ludvig Hektoen, Chicago, were added to the committee appointed by the Board of Trustees at its meetings, September 19-20, to cooperate with the Committee on Criminal Law and Criminology of the American Bar Association to study the relations of law and medicine in their relation to crime.

DR. ROLLIN H. STEVENS TO ACT AS CHAIRMAN OF LOCAL COMMITTEE ON ARRANGEMENTS

The acceptance by Dr. Rollin H. Stevens of the chairmanship of the Local Committee on Arrangements for the Detroit Session of the Association in 1930 was announced.

DELEGATES TO ELEVENTH DECENNIAL CONVENTION OF THE U. S. PHARMACOPEIA

The following were selected to represent the Association at the Eleventh Decennial Convention of the U. S. Pharmacopeia to be held in Washington, May 13, 1930: delegates, Drs. Olin West, Morris Fishbein and Paul Nicholas Leech; alternates, Drs. William Gerry Morgan, Ray Lyman Wilbur and W. C. Woodward.

APPOINTMENT OF COMMITTEE TO PREPARE A HISTORY OF THE AMERICAN MEDICAL ASSOCIATION

Drs. George H. Simmons, William Allen Pusey, E. J. Goodwin, Holman Taylor, W. L. Burrage and John E. Lane were elected to prepare a history of the American Medical Association, in accordance with the resolution adopted by the House of Delegates at the Portland Session of the Association.

MICHIGAN STATE MEDICAL SOCIETY TO ENTERTAIN HOUSE OF DELEGATES

An invitation from the Michigan State Medical Society to the officers and members of the House of Delegates to be its guests on the Monday of the week of the Detroit Session of the Association was accepted by the Board of Trustees.

ADVISORY COMMITTEE ON TRACHOMA DISCONTINUED

Feeling that the Advisory Committee on Trachoma Among the Indians has accomplished all that it is possible to accomplish, the Board of Trustees discontinued this committee, with a vote of thanks for the work done by it.

A. M. A. TO SEND DELEGATES TO BRITISH MEDICAL ASSOCIATION

The Board accepted an invitation from the British Medical Association to send delegates to its meeting to be held in Winnipeg in 1930, and referred to the President of the Association the matter of the appointment of delegates.

MEMORIAL SERVICES FOR DR. RICHARDSON

Memorial services will be held for Dr. Charles W. Richardson by the New York Avenue Presbyterian Church, of which he was a trustee and elder; the George Washington University, of which he was a trustee and professor emeritus, and the District of Columbia Medical Society, on Sunday, December 8, at 4 p. m., to which the President, the Board of Trustees and other officers and members of the Association are invited.

RESIGNATION OF DR. MAYER

The Board of Trustees accepted the resignation of Dr. William H. Mayer as chairman of the Committee to Cooperate with the Commissioner of Prohibition and the Secretary of the Interior.

COMMITTEE TO COOPERATE WITH THE NATIONAL COMMITTEE FOR THE ENRICHMENT OF ADULT LIFE

The Executive Committee of the Board of Trustees, composed of Drs. Walsh, Mitchell, Upham and Heckel (the latter ex officio), was appointed to cooperate with the National Commission for the Enrichment of Adult Life of the National Education Association of the United States.

EXPIRATION OF DR. BOVIE'S TERM ON COUNCIL ON PHYSICAL THERAPY

The term of Dr. W. T. Bovie on the Council on Physical Therapy expired, November 15. The Board has under advisement the selection of some one to fill this vacancy on the Council and will announce its selection at its next meeting.

MEDICAL BROADCAST FOR THE WEEK

The American Medical Association Morning Health Talks and Evening Health Hints from Hygeia

The American Medical Association broadcasts daily at 10 o'clock, Central Standard Time, with the exception of Friday, when the health message is delivered at 9:45, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of December 2-7 is as follows:

December 2. "The Mental Patient Before the Court," by Dr. R. G. Leland.
December 3. "Paralysis," by Miss Lois Stice.
December 4. "Electrical Hazards in the Home," by Mr. H. J. Holmquest.
December 5. "Health Laws to Protect School Children," by Mr. J. W. Holloway.
December 6. "The Daily Picture Hour," by Dr. R. G. Leland.
December 7. "Your Teeth and Your Health," by Dr. R. G. Leland.

Evening Health Hints from Hygeia, 8 o'Clock, Central Standard Time

December 2. The Esthetics of Eating.
December 3. Fruit Acids.
December 4. White versus Whole Wheat Bread.
December 5. Ultraviolet Rays Must be Used with Caution.
December 6. Five Factors of a Balanced Diet.
December 7. Care of Food Will Prevent Poisoning.

Ovarian Therapy.—The first attempts along the lines of ovarian therapy probably were made at the Landau Clinic, in Berlin, in 1896. Mainzer reports the case of a girl of 23 in whom double salpingo-oophorectomy had been performed for extensive pelvic inflammatory disease. She developed severe vasomotor symptoms, which failed to respond to ordinary methods of treatment. Ovarian therapy was then resorted to, probably by mouth. Before the beginning of the treatment, the patient averaged about twelve severe attacks per day of flushing of the head, giddiness, sweats, etc. Within three days of the beginning of the treatment the attacks had diminished to a daily average of five. To make sure that the effect was not merely psychic, the patient received a substitute (scraped meat) on the seventh and eighth days, and felt much worse. On again being given the ovarian substance, improvement was again noted, to be followed by retrogression when the substitute was given again on the fourteenth day.—Hutton, J. H.: Ovarian Insufficiency and Ovarian Therapy, *Illinois M. J.*, November, 1929.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Dr. Cannon Resigns as State Health Officer.—The state board of health accepted the resignation, November 9, of Dr. Douglas L. Cannon as state health officer on account of ill health. Dr. Cannon succeeded the late Dr. Samuel W. Welch, whose assistant he was. Dr. Stuart Graves, who has been acting state health officer during Dr. Cannon's illness, will continue in that capacity until a permanent head of the department is elected.

CALIFORNIA

Hospital News.—Los Angeles County has opened its new $300,000 "acute unit" of Olive View Sanatorium. It is of Spanish design, 496 feet feet long with fifty-four rooms, which will provide for patients who require special treatment that heretofore necessitated moving patients to the general hospital or elsewhere. Olive View Sanatorium was established in 1920 on a 468 acre tract with seven buildings. Now there are 150 buildings, representing an investment of $2,500,000. Only tuberculous cases are cared for on recommendation of the county charities department. The board of education maintains at the sanatorium two schools for children. About 500 employees are required at the institution. The superintendent is Dr. William H. Bucher.

Personal.—Governor Young has reappointed Dr. Alfred J. Scott, Jr., Los Angeles, a member of the state board of health. ——Gilbert N. Lewis, dean of the College of Chemistry of the University of California, has been awarded the Davy Medal of the Royal Society of London for his work on thermodynamics; he has since 1899 published about sixty reports culminating in a book, "Thermodynamics and the Free Energy of Chemical Substances," in the writing of which Prof. Merle Randall collaborated. The Davy Medal has long been awarded annually to scientists making important contributions to chemistry in England or America.——Karl F. Meyer, Ph.D., professor of bacteriology and director of the Hooper Foundation for Medical Research at the University of California, has returned from a four months' tour during which he studied undulant fever, and sanitation in canning plants in Europe.

Society News.—The San Bernardino County Medical Society was addressed, October 1, by Dr. Charles L. Bennett, Los Angeles, on "The Layman Looks at the Doctor."—— Dr. Harry E. Kaplan addressed the San Joaquin County Medical Society at Stockton, recently, on "The Aschheim-Zondek Test for Pregnancy," and Dr. George H. Sanderson on "Goiter Operation in Mental Disorders." The society was addressed, October 3, by Dr. William B. Faulkner, Jr., San Francisco, on treatment of lung abscess.——The Santa Barbara County Medical Society was addressed by Dr. Samuel Robinson on "Surgery of the Large Intestine," October 14.——Dr. James F. Percy, Los Angeles, addressed the Santa Barbara Dental Society, November 7, on "The Treatment of Carcinoma Above the Clavicle." The physicians of the county were guests of the dental society at this meeting.

Steamship Companies Aid Tropical Medicine.—Ten Pacific Coast steamship owners have subscribed $13,750 to be turned over to the Institute of Tropical Medicine of the University of California to aid in the study, diagnosis and treatment of tropical diseases which transoceanic commerce brings to the United States. While the Institute of Tropical Medicine of the University of California was organized only last February, affiliations have been made with several San Francisco hospitals, and efforts are being made to establish related centers of tropical medicine in Manila, Shanghai, Honolulu and Guatemala City. It is said that the British government and British shipping companies support similar institutions in London and Liverpool, and that Holland does likewise in Amsterdam and Germany in Hamburg. The purpose of the University of California Institute of Tropical Medicine is to provide a center for the study of tropical disease, to educate physicians and nurses in their care, and to study problems concerned with disease prevention and sanitation at sea. Arrangements for this fund were made by two alumini of the university.

DISTRICT OF COLUMBIA

Dr. Morgan to be Honored.—The Medical Society of the District of Columbia will hold a special meeting, December 11, in honor of Dr. William Gerry Morgan, President-Elect of the American Medical Association. Civic leaders of the community, among others, will be invited, and a program suitable for the occasion is being arranged. A buffet supper will afford the opportunity for a social hour. The chairman of the committee on arrangements is Dr. Frank Leech.

ILLINOIS

Personal.—Dr. Argal E. Hubbard, for about ten years medical director of the Municipal Tuberculosis Sanatorium at Peoria, resigned, November 15, to engage in private practice. ——Dr. Oscar D. Mulliken has been elected president of the Elgin Physicians' Club for the ensuing year.

Society News.—The Illinois Medical Laboratory Association, which will hold its fall meeting at the University of Chicago, December 5, will be addressed, among others, by Dr. Carroll Birch of the University of Illinois College of Medicine, on "An Evaluation of the Arneth, Schilling and Pettenkofer Indexes in Clinical Medicine," and by Dr. Howard M. Jamieson, Decatur, on "Some Notes on Diagnosis of Carcinoma of the Blood Serum." All laboratory workers are invited.

Forty-Eight Centenarians Among 90,000 Deceased.—Among 90,192 persons who died in Illinois last year were only forty-eight who had reached the age of 100 years—approximately one in 2,000. The same number of centenarians died in Illinois in 1923, but in 1918 there were only thirty-seven centenarians who died. The state health department says that "seeing 90" is much more popular, as 1,195 were at least that age among those who died in the state last year, and 770 of these were women. Every person in the state, the commissioner said, who is old enough to read has one chance in 100 of reaching the age of 90; one chance in ten of living to be 80 years of age, and one chance in three of living to be 70 years of age. The first year of life is one of the most hazardous and 8,333 children less than 1 year old died during 1928. These together with persons over 70 years of age (23,709) accounted for more than 35 per cent of the total mortality.

Chicago

Gifts to Presbyterian and Chicago Memorial Hospitals.—The will of the late William Liston Brown, formerly of Chicago, who died, November 1, at Pasadena, Calif., aged 87, provides ultimately that a portion of his $2,000,000 estate, amounting, as estimated by an expert, to $645,000, be given to the Presbyterian Hospital; $275,000 to the Chicago Memorial Hospital; $185,000 to the Evanston Hospital, and $92,000 each to the County Home for Convalescent Children and the Home for Destitute Crippled Children.

Society News.—At the fourteenth annual meeting of the Institute of Medicine of Chicago at the City Club, December 3, Dr. Ludvig Hektoen will deliver the presidential address on "The Institute Itself," and Dr. Morris Fishbein, editor of THE JOURNAL, will speak on "Propaganda."——The laboratories of the Chicago Department of Health made nearly 500,000 tests during 1928 which were classified under "community benefits" and "individual benefits." Dividing the total laboratory appropriation by the total number of tests performed gives an average cost of about 40 cents each.

Necropsies in Chicago Hospitals.—The tenth annual report to the governors of the Chicago Institute of Medicine on necropsies in hospitals included reports from fifty-two hospitals of Chicago. There was an increase in the number of autopsies, as previous reports showed. Permission necropsies made in Chicago in 1928 numbered 2,917, as against 2,094 in 1927 and 1,849 in 1926. The percentage of permission necropsies for 1928 for the hospitals reporting was 24.1. This is an important index, the committee says, of the general character of the professional work of the hospital; in a few of them standards of work continued at a low ebb. There were 2,271 cases of death referred to the coroner's office during 1928. The committee thanks the superintendents and staffs of the hospitals reporting for their cooperation.

INDIANA

Hospital Requires Staff to Be Members of Society.—At a recent meeting of the staff of physicians of the Union Hospital (about 185 beds), Terre Haute, the following regulation was approved and ordered placed in effect at once:

No physician or dentist shall be allowed the privilege of practicing in the Union Hospital except he be legally licensed and be a member of a constituent society of the American Medical Association or the American Dental Association.

Personal.—Dr. William R. Davidson, Evansville, is the new secretary of the Indiana State Board of Medical Registration and Examination, since the resignation of Dr. Eldridge M. Shanklin, October 1.——Dr. Albert E. Bulson, Fort Wayne, addressed the Four County Medical Society at Defiance, recently, on "What General Practitioners Should Know About the Eye."——Dr. Clyde R. Netherton, Chalmers, who has been appointed health officer of White County, is the third to be appointed this year. Dr. Harold H. Ash, Reynolds, his predecessor, will move to West Lafayette to engage in practice.——Dr. Stephen A. Douglass, formerly of Sunnyside Sanatorium, Oaklandon, has been appointed superintendent of the Valley View Sanatorium, Paterson, N. J.

MARYLAND

Personal.—Dr. Dean Lewis, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, gave the first of the Albert Berney lectures, November 7, at Mount Sinai Hospital, a series which has been provided for by Mr. Berney's friends in appreciation of his interest in the hospital.——Dr. Carrie W. Smith, recently with the New Jersey State Department of Health, has been appointed superintendent of the Montrose School for Girls at Reisterstown.——Dr. David I. Macht of the research department of Hynson, Westcott and Dunning, Baltimore, has been made a member of the Optical Society of America, an organization devoted to the advancement of optics and the service of all interested in any phase of that science.

Society News.—The Maryland Psychiatric Society was addressed, October 9, at the Springfield State Hospital, Sykesville, by Dr. Edwin P. Bledsoe, the superintendent, on encephalitis lethargica and by Dr. George H. Preston, state commissioner of mental hygiene, on the commitment laws of Maryland as they affect private hospitals.——The Society of Hygiene of Johns Hopkins Hospital was addressed, October 23, by Dr. Anna M. Baetjer on "Relations of the Sympathetic Nervous System to Contractions and Fatigue of Skeletal Muscles."——Drs. C. Hampson Jones, health commissioner, William H. F. Warthen, director, bureau of child welfare, and Valcoulon L. Ellicott, epidemiologist of the city health department, discussed their work before the Baltimore City Medical Society, November 1.——Eleven cases of tularemia were reported in Maryland in 1928; five of them were in Balimore City, where there was one death.——St. Mary's County Medical Society was reorganized, October 22, and Dr. Franklin A. Camalier, Leonardtown, was elected president.——Dr. William H. Wilmer, Baltimore, gave some impressions of the thirteenth International Congress of Ophthalmology before the ophthalmologic section of the Baltimore City Medical Society, November 7, at Osler Hall.——Dr. Frank S. Lynn addressed the Baltimore County Medical Society, November 20, on "The Surgical Diabetic"; Dr. Walter E. Grempler on "Infant Feeding," and Dr. William H. Smith on "Pernicious Anemia."——The Baltimore City Medical Society devoted its November 15 meeting to a discussion of cancer; Dr. Charles Geschickter spoke on "Cancer Research in Europe," and Dr. Warren H. Lewis, Johns Hopkins University School of Medicine, Baltimore, on "Cultivation of the Normal and Abnormal Cell."——Dr. J. Shelton Horsley, Richmond, Va., held a surgical clinic at the University of Maryland School of Medicine under the auspices of the medical extension division, November 14, and Dr. Charles R. Austrian a medical clinic, November 21.

MICHIGAN

Dr. Freund Resigns from Board of Health.—Dr. Hugo A. Freund, for about thirteen years a member of the board of health of Detroit, has resigned to devote his time to other duties, the chief of which is said to be work as director of the $10,000,000 Children's Fund of Michigan, established some months ago by Senator Couzens. The mayor of Detroit has appointed Dr. Ledru O. Geib to succeed Dr. Freund on the board of health.

State Builds Hospital in Detroit Section.—Governor Green has announced that within a few weeks Michigan will begin the construction of an $8,000,000 hospital for mental diseases on a 1,200 acre tract 6 miles southeast of Ann Arbor in Washtenaw County. The hospital is intended to relieve the congestion which has existed at the Pontiac institution for years and to care for at least 600 persons whom the courts have held insane but who are at liberty on account of the lack of hospital facilities. Work on the new institution will continue through the winter if weather permits.

Society News.—Dr. James M. Pierce, Ann Arbor, addressed the Oakland County Medical Society, November 21, on "Treatment of Pelvic Inflammatory Disease," and Dr. Harold A. Furlong, Pontiac, on anesthesia in obstetrics.——The Macomb County Medical Society, Mount Clemens, was addressed, November 14, by Dr. Charles W. Peabody, Detroit, on "Early Recognition of Bone Tuberculosis."——Midland County will start the operation of a full-time county health unit January 1. The Rockefeller Foundation and the state of Michigan will bear for a time nearly half of the expense.——The Gratiot-Isabella-Clare Counties Medical Society was addressed, November 14, at St. Louis, Mich., by Dr. Francis P. Corrigan, Cleveland, on South American medicine and surgery, illustrated.——Dr. Cyrus C. Sturgis, professor of internal medicine, University of Michigan Medical School, Ann Arbor, addressed the Wayne County Medical Society, Detroit, November 19, on "Treatment of Pernicious Anemia with Special Reference to Some Newer Methods."

Fourth Annual Clinic.—The Highland Park Physicians' Club will hold its fourth annual clinic at the general hospital, Glendale and Lincoln Avenue, Highland Park, December 5. There will be morning, afternoon and evening sessions, comprising diagnostic clinics by Drs. George C. Hale, professor and chief of the department of medicine, University of Western Ontario, London, Canada, on cardiovascular renal problems; Andre Crotti, Columbus, on the thyroid; George A. Ramsay, associate professor of orthopedic surgery and instructor in surgical pathology, University of Western Ontario, London, Canada, on childhood limps, and Charles P. Emerson, dean and professor of medicine, Indiana University School of Medicine, Indianapolis, on the stomach and gallbladder. Addresses will be given by Drs. Edwin N. Kime of the University of Indiana School of Medicine on "Physical Agents in the Commoner Infections of the Skin and Accessible Mucous Membranes"; Joshua G. R. Manwaring, Flint, on "Focal Infections"; Jacob L. Bubis, Cleveland, "Economic and Physical Advantages of Gynoplastic Repairs After Delivery"; Charles S. Williamson, professor of medicine, University of Illinois College of Medicine, cardiac decompensation; Walter G. Stern, Cleveland, "The Conservative Treatment of Compound Fractures," illustrated; Frederick H. Falls, professor of obstetrics and gynecology, University of Illinois College of Medicine, "Management of Eclamptogenic Toxemia"; Paul Titus, Pittsburgh, "Etiology and Treatment of Pregnancy Toxemias," illustrated, and Isaac A. Abt, professor of pediatrics, Northwestern University Medical School, Chicago, "The Prophylaxis and Treatment of Some of the Infectious Diseases of Childhood." The speakers at the dinner in the Masonic Temple will be Mayor Shields; Dr. Jacob D. Brook, Grandville, president of the Michigan State Medical Society, and Mr. Gus W. Dyer, Vanderbilt University, Nashville, Tenn.

MISSOURI

Hospital News.—Dr. Jabez N. Jackson, Kansas City, was the principal speaker at the "doctors' dinner" at the opening of the new sixty bed fireproof McCune-Brooks Hospital at Carthage, November 2. Dr. Jackson gave an address on the following day at the dedication of the hospital which was made possible by a gift of $75,000 from the late John C. Guinn of Carthage and a similar sum provided by the bond issue of the city.

Society News.—Dr. Eugene L. Swan, New York, addressed the Jackson County Medical Society, Kansas City, November 12, on "Psychology of Adolescence"; Dr. Otto J. Dixon, November 19, on "Thrombophlebitis of the Head and Neck," and Dr. Arthur E. Hertzler, "The Country Doctor Looks at Stomach Complaints."——Dr. Winton T. Stacy addressed the Buchanan County Medical Society, November 20, at St. Joseph on a "Brief Review of Cesarean Sections Done in the Missouri Methodist Hospital Over a Period of Five Years."——Dr. Albert S. Welch addressed the Jackson County Medical Society, November 26, on "The Causes of Diarrhea," and Dr. Ernest F. Robinson on "Surgery of the Stomach."

Golden Jubilee Meeting.—The St. Louis Medical Society set aside the evening of November 19 for a golden jubilee celebration. Members who had been in practice fifty years or more were guests of honor. The jubilarians were

Dr. Gibbon W. Carson	Dr. William J. Langan
Dr. Norman B. Carson	Dr. Heine Marks
Dr. Meyer J. Epstein	Dr. Tilly A. Martin
Dr. Francis R. Fry	Dr. George Richter
Dr. Joseph Grindon	Dr. Henry Schwarz
Dr. Frank P. Johnson	Dr. Cornelius C. Vanderbeek
Dr. Alonzo R. Kieffer	

Following a reception in the auditorium of the society's beautiful home on Lindell Boulevard, there was a buffet luncheon served by the ladies' auxiliary, music and dancing.

NEVADA

Society News.—The Washoe County Medical Society was addressed, October 8, by Dr. Byron H. Caples on syphilis, and by Dr. DeLos A. Turner of the veterans' bureau at Reno on "What the U. S. Army Has Done to Educate the Public on the Matter of Venereal Infections."——The Salt Lake County Medical Society was addressed, recently, by Drs. Earl L. Skidmore on "Thrombosis of the Popliteal Artery"; Samuel C. Baldwin, "Osteitis Fibrosa Cystica," and Alfred C. Callister, "Plastic Mobilization of Arm Following an Extensive Bone Injury."

NEW YORK

Wassermann Tests Among Prisoners at Sing Sing.—A survey of the last 6,000 men received at Sing Sing Prison, comprising 4,822 Caucasians and 1,178 negroes, showed that 581 of the former and 480 of the latter had positive Wassermann reactions in the blood, the white percentage being 12 and the negro, 41.9. The prison medical staff has administered more than 7,000 injections of arsphenamine during the last fiscal year; among the men treated definitely positive Wassermann reactions have been reduced to negative reactions in 7 per cent; 38 per cent of those treated have shown a marked reduction with both antigens, and 47 per cent have shown slight reductions, principally with the noncholesterolized antigen, while 8 per cent have remained unchanged. Dr. Charles C. Sweet, chief prison physician in reporting these statistics, called attention to the new prison hospital which has been opened within the last two months. He believes that no prison hospital anywhere equals that at Sing Sing in the way of equipment and facilities. The five-story 125-bed hospital is fireproof. It is situated on a high promontory within the prison walls. The top floor is given over to surgery; there is an operating room for surgically clean cases and one for infected cases; on this floor also are a large surgical ward and small rooms for isolated cases. The fourth floor is entirely for medical cases, having on the south end a large ward and elsewhere smaller wards of from four to ten beds. The third floor is given over to psychiatry with a laboratory and lecture room for staff meetings and dry clinics. The second floor has the dental office, eye, ear, nose and throat clinic, venereal clinics and pathologic and roentgen-ray laboratories with private offices for the staff members. Connected with the hospital is a block of eighty-eight cells known as the hospital annex, which is for the chronic invalids. The hospital staff comprises twenty-five physicians, five on a full-time bgsis. Sing Sing is a receiving prison, from which the men are transferred to other prisons. During their stay the medical staff endeavors to remove their physical handicaps. Each inmate is given a physical examination with routine blood and urine tests, a basal metabolism test and roentgen-ray examinations when indicated. His physical condition is charted and he is given an opportunity of having physical defects corrected or of signing a refusal to have them done. In the past three years more than 90 per cent of those who needed surgery expressed a desire to have it done.

New York City

Dr. Sabin Wins Pictorial Review Award.—*Pictorial Review* announces that the winner of its 1928 achievement award of $5,000 is Dr. Florence Rena Sabin, a member of the staff of the Rockefeller Institute for Medical Research. The award is made annually to the American woman who, in the opinion of a committee, has made the most distinctive contribution of the preceding year to art, science or letters. Dr. Sabin was given the award for contributions to medical science on the nerve centers, on the origin of the lymphatic system and on studies of the blood cells. She was the first woman to be admitted to and to graduate from Johns Hopkins University School of Medicine; the first woman intern at Johns Hopkins Hospital; the first woman member of the National Academy of Science, and the first woman member of the Rockefeller Institute for Medical Research. The committee of award comprised, among others, Senator Capper of Kansas, Otto H. Kahn, New York, Mary Roberts Rinehart, Carl Sandburg, and Madam Louise Homer.

Noise Etiquette.—The Noise Abatement Commission is studying the problem of the effects of noise on health and happiness. It will probably be some time before their report will be submitted. In the meantime the health commissioner believes that many bothersome noises can be abated at once if the citizens will follow a code of noise etiquette. He makes the following suggestions:

FOR RADIO OWNERS

1. Don't let the loud speakers in shops and dwellings rise above the natural loudness of the human voice. It is as inconsiderate to penetrate into other people's dwellings and places of business with the magnified tones of radio loud speakers as it would be to enter and shout.

FOR AUTOMOBILISTS

1. Look to the brakes on your car—squeaking brakes cause a large share of the complaints received during the year.
2. Don't toot the horn unnecessarily. Tooting to attract the attention of your friends in the house is lazy and selfish. Tooting during traffic waits accomplishes nothing, but increases the nervous tension of those waiting in line and irritates every one within ear shot.
3. Is the muffler loose on your car? The accumulated sound caused by loose mufflers creates much of the unpleasant pounding and jarring of traffic; also causes louder exhaust cut-outs.
4. Equip all possible trucks with pneumatic tires.

FOR OFFICE WORKERS

1. Make the fullest use of sound-absorbing partitions and screens both to dull the office-caused noise and to absorb street noises.
2. Put noisy machines where they can least disturb every one concerned and make full use of mats to absorb vibration and of screens and partitions to absorb sound.
3. Speak directly into the phone—there is no need, then, of speaking so loudly that others in the office have to hear your conversation.

FOR HOUSEHOLDERS

1. Give the children the quietest rooms in which to sleep.
2. Use sound-absorbing rugs, draperies, screens and self-linings—especially in bedrooms—to overcome noises entering from the outside.
3. Don't give parties often enough to get on the neighbor's nerves.
4. Don't indulge in loud music, laughter and conversation after the children have gone to bed unless their rooms are insulated against noise from the rest of the house.
5. Use shock-absorbing ash cans. A mat of hemp or rubber fixed to the base of the can will take care of this or mats can be placed on the sidewalk to receive the cans.
6. Dog owners should endeavor to keep their animals quiet.

PENNSYLVANIA

Society News.—Three hundred members of the Pennsylvania State Medical Society attended the public hearing on chiropractic legislation held at Harrisburg in February.——Members of the Lehigh, Northampton and Bucks county medical societies were guests of the trustees of the Allentown State Hospital at the opening of the new children's building, November 13.

Annual Secretaries' Conference.—The twenty-fourth annual conference of county secretaries of the Pennsylvania State Medical Society will be held at the Penn-Harris Hotel, December 3. The chief discussion will concern methods for improving the quality of the county society's service to its members and to the public. There will be a question box. Questions should be addressed to the secretary of the state society before the meeting. Among the speakers will be Drs. Harold A. Miller, Pittsburgh, and Edgar S. Buyers, Norristown.

Personal.—Dr. Thomas M. Logan has been appointed professor of bacteriology at the School of Dentistry of Temple University to succeed Dr. Charles S. Miller.——Dr. George H. Cross of Chester has been appointed assistant professor of ophthalmology in the University of Pennsylvania Graduate School of Medicine.——Dr. George H. Tibbins of Beech Creek was responsible, in part, for capturing three bandits who recently robbed the First National Bank of that city. The money is said to have been recovered and one of the bandits killed.——Dr. Charles L. Youngman, Williamsport, has been elected coroner for Lycoming County.

County Society Has Permanent Home in Hospital.—The November meeting of the Lycoming County Medical Society marked the opening of its permanent home in the Williamsport Hospital, where it has an auditorium seating 125 persons, a lounge, and a secretary's room and library with shelves for about 2,000 books. The annual fall clinic of the society, November 8, was conducted by the following members of the faculty of Temple University School of Medicine, Philadelphia: Drs. William E. Robertson, professor of theory and practice of medicine; Luther C. Peter, professor of ophthalmology; Frank C. Hammond, professor of gynecology, and William A. Steel, professor of principles of surgery.

Philadelphia

Society News.—The Philadelphia College of Pharmacy and Science is conducting an investigation in cooperation with the Mellon Institute of Pittsburgh to develop a practical means of retaining the antiseptic properties of iodine for local application in a vehicle which is less irritating than the present tincture of iodine.——A Pennsylvania unit of the National Association Against the Prohibition Amendment has been formed in Pennsylvania; it is reported that every county in the state will be represented on the board of directors. The object is to unite persons who believe national prohibition is unsound in principle. Drs. John B. Deaver and Francis R. Packard, Philadelphia; John M. Baldy, Devon; John D. Wilson, Scranton; James A. Lynch, Cresson; John L. Sagerson, Johnstown; Joseph M. Brockerhoff, Bellefonte, and Elmer Hess and Guy C. Boughton, Erie, are on the board of directors of the Pennsylvania unit.

——The Physicians' Square Club will hold its twenty-third consultation at the Hotel Sylvania, December 9, at 9 o'clock; the guest will be William A. Gray, Esq.

TENNESSEE

Infantile Paralysis Clinics.—There had been reported to the state department of health 129 cases of infantile paralysis by November 1, all of which were in eastern Tennessee except fourteen cases. The department believed that the peak had been passed and efforts were being directed to reach the children who had been paralyzed in this outbreak. The health department and the department of institutions were organizing clinics, which had already been held in Mountain City, Knoxville, Johnson City and Madisonville. At these clinics, a report of the condition found was sent to the family physician and efforts were made to provide treatment for the child. A physical therapeutist employed by the health department assists the family physician by teaching the family how to give the children the necessary muscle exercises.

Fewer Doctors and More People.—The administrative officer of the University of Tennessee, Orren W. Hyman, Ph.D., revealed in his annual report that Tennessee has 460 fewer physicians than it had thirteen years ago, although the population is estimated to have increased 200,000 in that time. The trend seems now to be toward an increase in the number of physicians. According to the *Journal of the Tennessee State Medical Association*, Dr. Hyman says that by 1931 there should be as many new medical graduates as there are losses, and after that enough to produce a slow increase in the ratio of physicians to the population. There is a shortage of physicians now in nine counties in eastern Tennessee, in twenty-five counties in middle Tennessee and in twenty counties in western Tennessee. Between 1919 and 1927, there was an average annual loss of fifty physicians from death and retirement, but between 1927 and 1928 this loss had been reduced to only eight each year.

Society News.—Dr. Albert B. Dancy addressed the Madison County Medical Society, Jackson, recently, on "Chronic Maxillary Sinus Disease," and Dr. Oscar O. Jones on "The Granger Technic of X-Ray Examination of the Sphenoid."——Several hundred school children are said to have been Schick-tested in Dyer County the last week in October because of an outbreak of diphtheria which had caused two deaths.——Dr. George W. Crile, Cleveland, will address the Nashville Academy of Medicine, December 9, on "Influence of the Thyroid and Adrenals on the Production and Treatment of Peptic Ulcer."——Dr. Hilliard Wood reported, November 5, before the Davidson County Medical Society, "A New Method of Removing an Open Safety Pin from Stomach and Esophagus."——Dr. Thomas J. Stockard, Lawrenceburg, addressed the Five County Medical Society at Linden, October 29, on "Differentiating Aortic Aneurysm and Mediastinal Tumor."——The only county medical society that was 100 per cent organized in 1928 in Tennessee was Maury, every physician who was eligible being a member of the society.

VIRGINIA

Society News.—A symposium on diseases of the gallbladder was presented before the South Piedmont Medical Society at South Boston, November 26, the speakers being Drs. John J. Neal, Danville, who discussed etiology; J. A. Owen, South Boston, bacteriology and pathology; David P. Scott, Lynchburg, medical treatment, and Rawley H. Fuller, South Boston, surgical treatment.

Personal.—Dr. Giles S. Terry, formerly on the staff of the Tucker Sanatorium in Richmond, and now on the staff of the American Hospital in Paris, recently returned to the United States, spending a few days at his old home in Halifax County before returning to France.——Dr. Goldsborough F. McGinnes, director of the laboratories of the state department of health and of the Richmond City Health Bureau, has been granted six months' leave of absence without pay in order that he may make a study of the New York City health bureau.

Health at Richmond.—Telegraphic reports to the U. S. Department of Commerce from sixty-five cities with a total population of about 30 million, for the week ending November 16, indicate that the highest mortality rate (17.8) was for Richmond, and that the mortality rate for the group of cities as a whole was 11.5. The mortality rate for Richmond for the corresponding week last year was 11, and for the group of cities, 12.4. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large negro population may tend to increase the death rate. The annual death rate for sixty-five cities for the first forty-six weeks of 1929 was 13, as against a rate of 12.8 for the corresponding period of 1928.

State Society Approves Mental Hygiene Program.—At the annual meeting of the Medical Society of Virginia, the house of delegates heartily approved the recent endeavor of the state to develop a comprehensive mental hygiene program which has for its main purpose the prevention of mental disorders. It commemorated further the extensive additions and other improvements made in the state institutions for mental diseases and recommended that means be provided for furnishing patients in these institutions with the most approved dietary so essential to their recovery and well being. The medical society emphasized the need in Virginia for enlargement of the colony for the feebleminded and epileptic, recommending that the state make sufficient enlargement of its hospitals to provide for all insane who need hospital care. The Medical Society of Virginia further recommended to the governor and the legisature that a chair of psychiatry be established in each one of the medical schools.

WISCONSIN

Personal.—Dr. Carl H. Davis, Milwaukee, is presenting a special course at Rush Medical College this fall in an experiment to adapt moving pictures and lantern slides to the teaching of gynecology and obstetrics.——Dr. Alfred J. Roach, formerly of Tewksbury, Mass., will take up the duties of superintendent of the Pure Air Sanatorium, Bayfield, in the near future, succeeding the late Dr. John M. Conroy.

Committee Offers Assistance to Mayor.—The Fond du Lac County Medical Society appointed a committee which met with the city council, October 22, to offer aid to the city of Fond du Lac in a threatened epidemic of typhoid, which then amounted to five cases. The mayor accepted the offer on behalf of the council. The committee will investigate the cases that have developed in order to trace the source of the infecetion. It appears that the city's water supply is from wells which are in danger of contamination at certain times by flood water.

Society News.—The Brown-Kewaunee County Medical Society was addressed in October by Drs. Harold E. Marsh, Madison, on cardiac lesions, and by Dr. Arnold S. Jackson on spinal anesthesia.——Dr. Carl H. Davis, Milwaukee, addressed the Jefferson County Medical Society, Fort Atkinson, October 17, on obstetric problems, illustrated.——Dr. Eben J. Carey, director of the department and professor of anatomy, Marquette University School of Medicine, addressed the Kenosha County Medical Society, recently, on "The Development of Bone," and Dr. Francis D. Murphy, director of the department and professor of medicine, on chronic glomerulonephritis.——The Milwaukee County Medical Society was addressed, October 11, by Dr. John W. Powers, on "Treatment of Old Ununited Fractures of the Neck of the Femur"; by Dr. Samuel J. Hoffman, Cook County Hospital, Chicago, on "Presentation of Four Cases of Rabies in Man," and by Dr. Jerome M. Lynch, New York, on "Importance of Diagnosis in Rectal Conditions."——The Milwaukee Academy of Medicine was addressed, October 22, by Dr. Ernst J. Oesterlin on carcinosarcoma of the thyroid, and by Dr. Andrew C. Ivy of Northwestern University Medical School, Chicago, on "The Mechanics of Digestion with Special Reference to Bile Flow."——The Ninth Councilor District Medical Society met at Marshfield, October 10; Dr. Henry Schmitz, Chicago, spoke on "Clinical Significance and Treatment of Benign Uterine Hemorrhages"; Dr. Arlie R. Barnes, Rochester, Minn., on "Etiologic and Pathologic Approach to the Diagnosis of Heart Disease," and Dr. John E. Gonce, Jr., University of Wisconsin, on "Use of Citric Acid in the Artificial Feeding of Infants."——Among others, Dr. Carl Beck, Chicago, addressed the Tenth District Medical Society at its twenty-ninth annual meeting at Eau Claire, October 10, on "Surgery and Other Interesting Observations from Abroad in 1929," and Dr. C. N. Hensel, St. Paul, on "Diuretics in Cardiac Disease."

GENERAL

Society News.—The Physicians' Home, Inc., is now caring for its guests at two sanatoriums in Stamford, Conn., and in one at Amityville, N. Y. The original unit of the home at Caneadea, N. Y., was found to be too far away to be practicable after the death of its director, Dr. Stephen V. Mountain. The home is said to be considering a site in Florida for a unit.

Tariff Increased on Autoclaves.—An increase in the tariff on autoclaves the largest inside diameter of which exceeds 20 inches to 50 per cent ad valorem was approved by the Senate in Committee of the Whole, November 7. Senator Copeland, November 11, served notice that he will seek a reduction when the committee reports to the Senate. Under existing law, the

tariff on autoclaves used to sterilize surgical dressings is 40 per cent ad valorem, according to statements made when the matter was under discussion in the committee.

Proposed Definition of Fruit Juices.—The food, drug, and insecticide administration of the U. S. Department of Agriculture has proposed tentative definitions of fruit juices, grape juice and orange juice. Criticism and suggestions regarding them are invited from all interested parties. Communications should be addressed to A. S. Mitchell, secretary, food standards committee, department of agriculture, Washington, D. C., not later than February 1. Fruit juices, according to the proposed definition, "are the clean, unfermented juices obtained from the first pressing of sound, mature, fresh fruits, or of their pulp, and correspond in name to the fruit from which they are obtained."

Medicinal Tastes in Water Supplies.—For years and especially since the World War, the water supplies of some cities of the midwest and eastern parts of United States have had a medicinal taste and odor. This difficulty has been most noted in the area tributary to the upper portion of the Ohio River, which drains a region having many coal and steel industries. A study of these tastes and odors by the U. S. Public Health Service revealed that they are due to the replacement in the coke industry of the old beehive ovens for burning coke by the modern by-product plants from which valuable substances are recovered from the gases which formerly went into the atmosphere as waste. The residues from these recovery processes, especially those concerned with the manufacture of ammonia and benzene, contain tar, cresols, phenols and cresotes, which when discharged into streams tributary to water supplies produce characteristic medicinal tastes and odors. Studies by other workers have shown that the oxidation of phenolic waste when mixed in proper proportion with sewage is essentially a biochemical phenomenon. It is believed that the oxidation of phenols in the Ohio River is due to a process of natural biochemical oxidation. The bringing under a large measure of control since the war of the pollution of the Ohio River by phenol waste is said to be one of the bright pages in recent sanitary history. It has been accomplished through the cooperative effort of federal and state governments and the industries concerned. Although not completely eliminated, it has been curbed to an extent to justify the expectation that in the near future it will cease to be a major problem along this water way.

Anniversary of Mental Hygiene Movement.—The twentieth anniversary of the mental hygiene movement was celebrated at a dinner in New York, November 1, at which Dr. William H. Welch of Johns Hopkins, Baltimore, presided, as honorary president of the National Committee. The president of Yale University, James R. Angell, spoke on "Mental Hygiene in the College and the University"; Dr. William A. White, superintendent, St. Elizabeth's Hospital, Washington, D. C., reviewed the twenty years' work and discussed the coming International Congress on Mental Hygiene, which will be held in Washington next May. Other speakers were the medical director of the national committee, Dr. Frankwood E. Williams, and Mr. Clifford W. Beers, the secretary. The movement to prevent mental illness is said to have started in a state society formed in Connecticut, and Mr. Beers is credited with founding the movement which has been extended throughout the United States and into foreign countries. Soon after his own recovery in 1903, Mr. Beers dedicated his life to the cause of mental hygiene. His first step was the writing of an autobiography entitled "A Mind That Found Itself." He next, according to the New York *Times*, was instrumental in founding the Connecticut Society for Mental Hygiene in 1908. On Feb. 19, 1909, the National Committee for Mental Hygiene was formally launched with the late Dr. Henry B. Favill of Chicago as president and Mr. Beers as secretary. The committee was able to secure the cooperation of distinguished men and women and later to obtain financial help from some of the foundations. Speaking of the beginning of the mental hygiene movement, Dr. White said:

> For a hundred years patients had been leaving our public institutions for mental disease with a sense that if they had gotten well they did not owe it to the way they had been treated. . . . But it was given to only one man who had had similar experiences to have these memories of his treatment strike deep to the very core of his being, and there . . . they took root and grew and produced the fruit which is now the mental hygiene movement. He had been outraged like others had been, but by some strange alchemy these outrages did not have the same effect. They stirred him to creative activity. They stimulated him to try to find the reason for it all. . . . The genius—and I use that word advisedly—whose mind among a million saw opportunity where no one else had seen it for a century, that genius I do not need to name in this assembly. But lest there should be some strangers amongst us who have no inkling of the lifetime of sacrifice to this ideal which has brought about the results which I have only just intimated, I shall speak more fully. That genius is Mr. Clifford W. Beers.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 2, 1929.

The Tannic Acid Treatment of Burns

The tannic acid treatment of burns, which was introduced in 1925 by Dr. E. C. Davidson of the Henry Ford Hospital, Detroit, as a method which relieved pain and prevented absorption of the toxins produced by the burn has become very popular in this country. A report published by the Medical Research Council of the work of Mr. W. C. Wilson in the department of surgery of the University of Edinburgh shows that the method greatly reduces or abolishes the pain of dressings and greatly reduces the mortality. A consecutive series of 117 cases treated gave a death rate of 10.5 per cent against 48.7 for an earlier series not so treated. At the request of the council Mr. Wilson has added detailed suggestions for the use of tannic acid in the first-aid treatment of burns, with a view to its adoption on emergency in coal mines, stoke holds and other places where the risks of burns and scalds is high.

Third Party Insurance in Motor Accidents

The second reading was carried in the house of commons of a government bill conferring on third parties rights against insurers of third party risks in the event of the insured becoming bankrupt. In moving the second reading the attorney-general said that in a recent case a company which owned motor cars and was insured against third party risks had judgment for $2,500 entered against it for injury to a pedestrian. Before he could recover the money the company went bankrupt and the insurance company had to pay the money not to the injured man but to the liquidator of the company to be distributed among the general creditors. The injured person had to be content with a dividend. The bill will confer on an injured person the right of dealing directly with an insurance company in which the person responsible for the accident is insured, so that the money which accrues in consequence of his injury shall be allocated to him and not used for the benefit of other creditors.

An Ophthalmologist's Theory of Road Accidents

An ophthalmic surgeon has written anonymously to the *Times* pointing out that traffic regulations are based mainly on hearing—a very weak sense in man. Man's capacity for realizing the direction of sound is poor and quite unreliable. His hearing is also slow—not quick like that of the cat—and where many sounds are concerned he becomes confused. With a sudden sound he jumps irresolute. His sense of sight is immeasurably superior to that of hearing. Long ago the railways learned that traffic security must depend on signals which are seen, not heard. The motor horn engenders a false and fatal sense of security. So long as sound signals are relied on will the shocking list of the maimed and the dead on the road increase, no matter what other steps are taken. The road can and must follow the rail.

The Prevention of Cancer Due to Lubricating Oils

The Manchester Committee on Cancer has obtained valuable new information bearing on the causation of malignant disease by the lubricating oils used in cotton mills. Previous tests of the cancer producing power of various lubricating oils have been confirmed and the concentration of the cancer-producing principle is being successfully investigated. The active principle of a pure artificially made tar has been concentrated to such an extent that a 5 per cent solution is more powerful than shale oil, the most dangerous of all the commercially used oils. Also two pure compounds of known chemical constitution have been

found capable of producing tumors. Further investigations are being carried out in order to ascertain the factors which change a noncarcinogenic into a carcinogenic substance. No carcinogenicity could be found in bitumen, but pitch proved to be very active as a cancer producing agent. An investigation of the highest practical importance has been carried out with a view to destroying the cancer producing power of certain oils and so making them safe for industrial use. A purified oil has been obtained which when subjected to severe tests failed entirely to produce cancerous growths. Tested for its lubricating value in the cotton industry, this oil proved as good as the crude untreated oil. The committee therefore hopes to submit soon to the public an oil with the practical values required by the industry and yet quite safe to workers. At present it recommends the use of lubricating oils which contain no shale oil.

A World-Wide Increase in Suicides

In a letter to the *Times* Mr. F. L. Hoffman, consulting statistician, Prudential Insurance Company of America, calls attention to a world-wide increase in suicides, as shown in the following figures:

Suicides in England and Wales—1918-1928

	Deaths			Rate per 100,000		
	Male	Female	Total	Male	Female	Persons
1918....	1,845	920	2,765	11.1	4.7	7.5
1919....	2,340	1,008	3,348	13.6	5.2	8.8
1920....	2,427	998	3,425	13.4	5.1	9.0
1921....	2,763	996	3,759	15.3	5.0	9.9
1922....	2,817	1,059	3,876	15.6	5.4	10.0
1923....	2,887	1,062	3,949	15.7	5.3	10.3
1924....	2,635	1,085	3,720	14.2	5.4	9.0
1925....	2,852	1,232	4,084	15.3	6.1	10.5
1926....	3,099	1,350	4,449	16.6	6.6	11.4
1927....	3,458	1,449	4,907	18.4	7.7	12.5
1928....	3,409	1,473	4,882	18.0	7.2	12.4

Gas Suicides in England and Wales—1921-1928

	Male	Female	Total		Male	Female	Total
1921.....	233	132	365	1925.....	465	297	762
1922.....	330	173	503	1926.....	588	355	943
1923.....	449	239	688	1927.....	658	340	998
1924.....	373	212	585	1928.....	667	421	1,088
	1,385	756	2,141		2,378	1,413	3,791

In England suicide by gas has now become the most popular form of seeking death. In sixteen European countries with an approximate population in 1927 of 236 million, suicides have increased in the last seven years from 30,757 to 39,245, or from a rate of 13.7 to 15.9 per hundred thousand. In twelve non-European countries, including the United States, the increase was from 12 in 1918 to 13.3 in 1927 per hundred thousand. For the United States the increase in the same period is from 11.7 to 13. In Germany the male suicide rate has increased from 20 per hundred thousand to 39 in 1926.

Drug Traffic in Egypt

The director of the Central Narcotics Intelligence Bureau, Cairo, Mr. T. W. Russell, has issued a report on its work in discovering the channels through which drugs filter into Europe. It was discovered that two separate gangs existed in Vienna who sent first-class passengers to Alexandria with trunks of the type known as American wardrobe, which had been specially manufactured in Vienna and contained secret compartments holding as much as 20 Kg. of heroin. With the assistance of an officer of the Cairo police the two gangs were arrested in Vienna, but owing to the mildness of the Austrian law were condemned only to fines or imprisonment varying from two to seven days. It was found that the stuff had been made by a factory in Switzerland and was a preparation of morphine which, although resembling heroin in every respect as regards habit-forming and narcotic powers, was not included in the list of drugs prohibited by the Swiss federal law. Through one channel alone it is calculated that more than 500 Kg. of morphine derivatives have been introduced into Egypt in the past four years. Mr. Russell says that the number of addicts is increasing and estimates their total as over 100,000.

The Abolition of Child Marriages in India

The scandal of child marriages in India has aroused much condemnation in both England and America. Though desiring to stop the practice, the British government has been prevented by the religious sanction of these marriages, a cardinal point of its policy being not to interfere with the religious opinions of Indians. But western civilization is profoundly changing India and her own reformers are now struggling against this scandal. Despite their zeal the government was unwilling to approve a bill passed by the assembly in 1924 raising the age for marital relations to 14 and extramarital to 16 and brought forward a milder one setting the ages at 13 and 14, respectively. This became law in 1925. Pressure was continued and the influence of American opinion was powerfully on the side of the reformers. The very bitterness with which criticisms were described as insults to India and which were repudiated by well known writers exercised an educative effect and liberal feeling became stronger. Indian women, too, joined vigorously in the fray, asserting their natural rights to natural growth and to a normal education which were precluded by marriage and childbearing in early girlhood. The result is that the government is supporting a bill which proposes to penalize the consummation of marriage with a girl between the ages of 12 and 15. The relatives and guardians of the parties will be liable to imprisonment and fines. As already stated, the marriage contract is itself an offense if the girl is below 14. Modest and cautious as these proposals may seem, they will be fiercely resisted. The rule of child marriage is so prevalent in India that the census of 1921 revealed a quarter of a million wives and widows not over 5 years of age, and 2 millions of 10 years or less. Forty per cent of the girls between 10 and 15 were married.

Mycologic Conference

The second imperial mycologic conference has been held in London. Delegates were present from all the dominions and colonies. A paper summarizing plant protection regulations in the dominions and colonies was prepared by the imperial bureau of mycology. It showed that the majority of them had taken measures to exclude specified plants, either completely or from certain places. Most of the governments provide for the compulsory examination of all plant imports or their fumigation against insects. In a few cases examination is restricted to certain plants. Plant packings are also treated or destroyed. Internal plant protection measures include the appointment of inspectors with powers to prescribe treatment on specified lines or to order the destruction of plants. Most countries are now prepared to issue certificates of health of consignments intended for export. Seeds appear to be seldom subject to import regulations.

Hospitals and the Cost of Motor Accidents

The heavy drain on the resources of many hospitals by motor accidents, for which little or no compensation can be obtained from the patients, has been described in previous letters to THE JOURNAL. The British Hospitals Association has authorized a letter to be sent to members of parliament interested in hospital questions, stating that the association will press for some recognition of the claims of voluntary hospitals to reimbursement of the cost of treatment of those brought injured in motor traffic, who are either in a position to pay themselves or are able to obtain compensation. Hospital opinion is divided with regard to the proposed compulsory insurance of motor car owners

against third party risks. Now that the Royal Commission on Transport has advised strongly in favor of it and there is an indication that a bill will be introduced into parliament, the association asks that provision should be made for out-of-pocket expenses of hospitals which treat accidents and other cases which benefit by insurance claims. The government has held a conference with representatives of motor insurance organizations. The latter consider it necessary to bring about a reduction in the vast numbers of accidents. They recognize that hardship may be caused to innocent persons who are the victims of motor accidents and find that those responsible are without means of meeting their liabilities. The plan of the state of New York, which requires that all motorists shall give evidence of financial ability to meet their obligations under law, is commended.

Educating Children in the Value of Hospital Work

The Propaganda Committee of King Edward's Hospital Fund for London has undertaken an enterprise which should equip the rising generation with a much better knowledge than their fathers of the work of the London hospitals. By invitation of the committee well known surgeons and physicians lecture at the schools on the hospital's activities. The following are some of the subjects: "What would happen to you if you had an accident in the street?" "One day in the life of a hospital"; "some modern methods of fighting disease"; "how the cripple is cured." The lectures are purely educational and no appeal is made for funds. Facilities have been provided for the older scholars to visit the hospitals and see for themselves how science is combating disease.

PARIS

(From Our Regular Correspondent)

Oct. 23, 1929.

The Thirty-Eighth French Congress of Surgery

(Concluded from page 1665)

THE EVOLUTION AND TREATMENT OF TENDON WOUNDS OF THE HAND

The third and last topic on the program of the congress was treated by Jean Charles Bloch of Paris and Bonnet of Lyons. They studied first experimentally the conditions of cicatrization of the cut tendon, the associated causes that may modify them, and the evolution of the dead and the living grafts introduced to replace the loss of substance; then, clinically, the evolution of the tendon wounds. Finally they took up the exposition and the discussion of the numerous therapeutic procedures proposed. Their conclusion is that a complete recovery cannot be obtained unless, in addition to the restoration of the continuity of the tendon, the physiologic conditions of its functioning, as regards the tendon sheaths and the absence of adhesions, are likewise restored. The authors, however, confirm that, in spite of the improvements in the technic, the results of tendon suturing are not always the best, the most favorable statistics giving only 81 per cent of good results in the suturing of extensor tendons and 53 per cent of good results in the suturing of flexor tendons. Immediate suturing always gives much better results than secondary and late suturing. Above the wrist, in the region of the carpal and the metacarpal bones, suturing of the extensors results much better than in the region of the fingers, especially the second and third phalanges. In the thumb, failures are frequent, owing chiefly to infection. The flexors may be sutured quite successfully above the wrist, but the results are poor in the channels of the carpal bones and still worse in the palm of the hand, and it often happens that adhesions hamper proper functioning, so that many surgeons, in various countries, have come to advise against suturing of palm tendons. Among the general causes leading to poor results in tendon suturing are infection (from 12 to 15 per cent); detachment (rather rare); the use of poor material (linen thread is better than catgut); adhesions especially, in spite of the many methods proposed to prevent them. The authors give preference to the methods proposed by Cunéo and Sterling-Bunnell. The use of dead grafts gives ordinarily good results. Live grafts are exposed to infection and to the formation of adhesions. Sterling-Bunnell, however, has secured excellent results by using a fragment of a superficial flexor tendon. As a rule, the grafts unite better for the reparation of the extensors than of the flexors.

The discussion that followed the presentation of the paper was participated in by Dr. Alivisatos of Athens, who recommended immediate suturing; Dr. Léonté of Bucharest, who interposes, after suturing, a strip of peritoneal membrane beneath the skin and thus prevents the development of adhesions; Dr. Guyot of Bordeaux, who reported good results from suturing after division of all the tendons of the wrist; Dr. Rottenstein of Marseilles, who obtains good results by ensheathing the sutured tendon in a fragment of the vein; Dr. Arnaud of St. Etienne, who prevents adhesions by applying liquid petrolatum to the sutured tendon; Dr. Henri Lardennois of Reims, who isolates the tendons by means of fat grafts; Dr. Masini of Marseilles, Dr. Delagénière of Mans, and Dr. Sénéchal of Paris.

In addition to the three main topics on the program, the congress received many private communications on: autotransfusion of the blood after irradiation with roentgen rays in cancer and grave infections (Dziembowski of Bydgoszcz [Bromberg]); narcosis by means of intravenous injection (Mayer of Brussels); intravenous injections of calcium chloride in postoperative retention of urine (Chosson of Marseilles); rachianesthesia (Cathelin of Paris and Le Filiâtre of Paris); the use of the electric knife (Heitz-Boyer of Paris); diathermocoagulation in cancer of the neck of the uterus (de Fourmestraux of Chartres); interventions on the pelvic sympathetic nerves in gynecology (Guyot of Bordeaux); osteosynthesis of the spine in scoliosis (Lance of Paris); physiologic gastrectomy (Soresi of New York); the use of leeches in the abortive treatment of acute phlebitis (Termier of Grenoble), and others.

At the close of the congress, the general assembly of the Association française de chirurgie, in plenary session, chose M. Auvray, surgeon to the hôpitaux de Paris, as president of the congress for the ensuing year, and M. Lambret, professor of the Faculté de médecine of Lille, as vice president; he will then serve as president of the congress in 1931. The three topics selected for the program of the congress next year are: (1) the preparation of patients for operation, to be presented by MM. Sauvé of Paris and Lambret of Lille; (2) traumatic spondylosis, to be considered by MM. Mouchet of Paris and Froelich of Nancy, and (3) hemorrhagic pancreatitis, by MM. Brocq of Paris and Miginiac of Toulouse.

The Sixteenth French Congress of Hygiene

The sixteenth Congrès français d'hygiène met in the Great Hall of the Institut Pasteur, Paris, under the chairmanship of Dr. Georges Brouardel, physician to the hôpitaux de Paris and member of the Academy of Medicine, and with the cooperation and presence of M. Oberkirch, undersecretary of state to the ministry of hygiene and social insurance. In the many communications presented, much emphasis was laid on the difficulties encountered in France by the departmental inspectors of hygiene in fulfilling effectively their technical rôle, in view of the complications and the frictions with the administrative authorities under whom they serve. The conclusion reached is that the law of July, 1902, which is still the official chart or guide for the administration of health work in France, should be revised at once, as it is no longer in harmony with conditions as they exist at present. The undersecretary of state expressed the same view in his inaugural address, and he promised to urge parliament to revise the law. Three main topics were entered on the program. In the paper on the first topic, "The relations of the health services to the administrative

services for the surveillance and protection of children," the speaker, M. Bussière, presented a veritable arraignment against the latter, who refuse to allow the physician other than a consultative rôle in all the undertakings in which his collaboration is indispensable. In some regions the prefecture services dispense with his aid and substitute women nurses of their own choosing. Under these conditions, M. Bussière said, it is not surprising that the morbidity and the mortality among children reach such a high figure.

M. Mirman, formerly general director of the Assistance publique in the ministry of the interior, under which the incriminated services operate, sought to defend them, pointing out that the physician was not adapted to supply information on a mass of questions of an administrative, legislative or financial nature, and if he were held responsible for giving such information, he would not have time to devote to his technical rôle. M. Cruveilhier, with the aid of comprehensive statistics, pointed out the value of the work done by France in the crusade against child mortality and the low birth rate, as compared with the situation in other large nations of Europe. He brought out that, of late, conditions in France had showed marked and steady improvement. MM. Ginestous and Llaget of Bordeaux presented a communication on the results of medical inspection of schools in that city—also on the creation of prenatal consultation services.

Professor Lisbonne of Montpellier read his paper on the second topic, "Laboratories and hygiene; control of laboratories." MM. Scherb of Mulhouse, Merle of Niort, and Mlle. Simonet offered some interesting communications on this subject.

Accidental intoxications occurring during the disinfection of dwellings with hydrogen cyanide gas, the subject of the third question, furnished the material for the paper of M. Kohn-Abrest, director of the laboratory of toxicology of the prefecture of police of Paris. On the use of this gas for the disinfection and the deratization of steamers, communications were presented by Professor Violle of Marseilles, Dr. Loir of Havre and Dr. Cury, a representative of the Compagnie générale transatlantique.

In addition, a large number of private communications were presented. Among the more important, these may be mentioned: Dr. Dujarric de la Rivière on the maritime and quarantine services of Egypt; Professor Mosserli on the collection and treatment of garbage; Dr. Loir on the organization of the new depot of the emigration service at Havre; Dr. Jaubert on the new regulations with respect to sanitary passports; M. Gouineau on the protection of dwellings against exterior noises; M. Philippe Bunau-Varilla on the javellization of drinking water; M. Cuvier of Bordeaux on the evolution of methods of bread making and their influence on the health of the consumer and that of the bakers; Dr. Mazières on the usual equipment for the practice of medicine of the private office of the physician, and its inadequacy from the standpoint of disinfection and the transmission of infectious diseases.

The Congress of Hygiene closed with a visit of its members to the pediatric service of Dr. Jules Renault at the Hôpital St. Louis, the modern equipment of which provides for continuous aeration by means of conduits coming from basements and supplying air sterilized by filtration, and cooled or warmed according to the season of the year or the temperature outside. This equipment has diminished by one half the child morbidity in the service.

Diphtheritic Toxin

M. Ramon has addressed to the Academy of Sciences a note that was presented by M. Roux, director of the Institut Pasteur, on a new method for securing diphtheritic toxin that is much more effective than the old toxin. The interest of this discovery lies in the fact that M. Ramon has been able to prepare with this new product an anatoxin that is likewise more active and confers a more effective and lasting immunity against diphtheria.

MADRID

(From Our Regular Correspondent)

Oct. 24, 1929.

The King an Honorary Academician

(Concluded from page 1666)

The king has always shown interest in the medical profession and in medical studies. He has recommended that the government of Barcelona give financial aid to the Real Academia de Medicina of Barcelona so that it can improve its buildings, which are inadequate. Barcelona has lent an ancient and beautiful palace to the academy which was dedicated during the stay of the king in the city. In acknowledgment of the king's concession, the academy appointed him an honorary member. He was presented with a gold medal, and was given the place and number on the list of members which the surgeon Dr. Cardenal, who died last year, had held during his life. The dedication of the building and the entry of the king as an honorary academician took place on the same occasion. The king, the president of the academy, the president of the provincial committee and the president of the government made speeches before a large audience. The king made a noteworthy speech in which he promised adherence to the medical profession and expressed enthusiasm about the progress of the science. He stated that he wished the science of medicine might attain its highest development during his reign, and promised constant cooperation in the work of the academy. He offered his influence in procuring the palace for the permanent use of the academy.

Last Will of the Count of Cartagena

The Count of Cartagena recently died in Switzerland. Because of his career as a diplomat he was able to stay in Spain only for short periods and thus was acquainted with only a limited number of persons. In his will he donated nearly twelve million pesetas (about $2,280,000) for the advancement of science. He allotted his donations among the royal academies of fine arts, sciences, medicine, history and languages. He donated the interest on a fund of one million two thousand pesetas ($228,000) to the Academia de Medicina. This interest is to be devoted to the creation of five prizes of five thousand pesetas ($950) each, and to the foundation of a chair, to which no one of the present teachers may aspire. The department to be represented by that chair is a topic of considerable comment. Many physicians believe that it would be practical to establish a chair of experimental pathology. Several wealthy men have given money for the benefit of the general welfare within the last few years. The Marquis de Valdecilla has given more than fifteen million pesetas (about $2,850,000) for the foundation of a hospital in Santander, which is the capital of the province in which he was born. Mr. del Amo, who made his fortune in the United States, has given much money to the University City of Spain. Others have made similar donations, especially wealthy persons who have returned from America. They have established foundations in some northern cities of Spain. These foundations honor them and contribute to the welfare of the residents of the country.

Dr. Vincente's Method of Lavage of the Bronchi

Dr. García Vincente, laryngologist, who for many years was director of the Instituto Antidiftérico Municipal of Madrid, has observed the following phenomenon: The larynx of children and adults reacts with a cough and other manifestations of defense when a small particle of food or a drop of water is diverted into it from the pharynx, but it does not react when a large sound is introduced into it which is equal in size to the caliber of the larynx. This is the case when intubation is performed. Dr. Vincente calls this phenomenon the laryngeal paradox. In observing the paradox, Dr. Vincente introduced a urethral sound into the larynx and noticed that it was well tolerated. He then placed the patient on his side and

introduced a quantity of water through a large syringe. The water returned through the patient's mouth without producing asphyxia. He then introduced iodized oil and obtained a roentgenogram of the lungs which outlined the bronchial trees plainly. Later he applied his observations therapeutically and presented his results containing valuable and scientific data before the Academia Médico-Quirúrgica of Madrid.

After further investigations, he presented his data in Paris, and gave lectures and demonstrations in several hospitals and clinics of the Faculty of Medicine. The French medical journals have reported on his lectures and on the therapeutic uses of his method, which is utilized for lavage of the bronchi. Dr. Vincente intends to investigate its therapeutic uses thoroughly and is now studying the origin of the fever which patients suffer after the first lavage. Fever is not observed in later treatments. Dr. Pulido Martín, urologist of the Hospital de San Juan de Dios, believes that the fever is caused by a bacteremia, which is similar to that which produces the fever after catheterization.

Epidemic of Poliomyelitis in Madrid

The health authorities of Madrid have discovered more than forty cases of poliomyelitis in the city and its suburbs and have officially declared the presence of the disease. Previous health authorities have not officially announced epidemics even when many cases of disease were seen and danger of contagion was serious. This was the case in several epidemics of typhus fever, typhoid, and other diseases. The procedure in the present epidemic has been different, perhaps because young men who were educated in the United States are now in charge of many of the positions in the public health department. The health authorities have demanded that physicians report immediately every case of the disease which they see. They have made isolation compulsory and have taken general precautions everywhere.

Medical Miracles in Spain

In Spain, where the tradition of miracles is rooted in all social spheres, honest scientists and physicians have to be satisfied with modest rewards, while their unscrupulous colleagues garner the lion's share. This injures the general morale of the younger generation. Some time ago a man who came from Mexico claimed that all persons had tenia, and in a short time had acquired a fortune as a result of his extensive practice. Even now, he would probably be a physician of prestige had he not been discovered placing the tenia into the feces of a patient (the sister of the late King Alfonso XII) after a cathartic had been administered to her. The unhappiness of the royal family, whose second son is deaf and dumb, and whose first son (the Prince of Asturias) has hemophilia, has permitted entrance into the royal palace of many physicians and others who are not physicians, whose therapeutic procedures are absolutely unscientific. Methods which could not be presented before any scientific society have been employed on the members of the royal family.

Recently a pharmacist of Barcelona proposed a serum against cancer, which was accepted under the patronage of the prominent people of Spain. The unscientific work of this pharmacist threatened the reliable work on cancer in Madrid, where Dr. Goyanes, director of the cancer institute, conducts work that is strictly scientific.

New Deans for the Hospitals of Madrid

The provincial committee of Madrid has charge of the department of public health of the province of Madrid. It is a division of the national department and has the general hospital of Madrid, the Hospital of San Juan de Dios, and some other hospitals under its care. Three deans among the physicians of these hospitals recently reached the age of retirement (70) and have been relieved from duty. They are Dr. Mansilla, ophthalmologist; Dr. Elicegarsy, physician to the royal family, and Dr. Juan Madinaveitia. Dr. Madinaveitia is prominent in the medical profession of Spain, and has been active in bringing about changes in the science of medicine with his slogan: "We shall have clinics instead of speeches, and autopsies instead of books."

The provincial committee has appointed Dr. Codina, a well known phthisiologist, as a dean. In his speech of inauguration he said that the economic support which the provincial committee gives to patients and inmates under its care will help him in the development of a satisfactory work. The committee has voted twenty-two million pesetas ($4,180,000) for the construction of an insane asylum and twelve million pesetas ($2,280,000) for the construction of an asylum for children. These asylums and the new maternity hospital (which is now under construction) will not give satisfactory results if the clinic services do not have generous donations to back them. When economic conditions are not prosperous, the medical personnel should be small. The auxiliary personnel should be suitably paid, should be sufficient in number and should have a knowledge of the work which is being carried on. The clinics, which now have all necessary elements, have been equipped in most cases by the physicians in charge at their own expense. It is hoped that cooperation between the committee and the physicians will correct the present deficiencies.

BERLIN

(From Our Regular Correspondent)

Oct. 26, 1929.

Dietary Treatment of Tuberculosis

The modified diet treatment introduced by the Bielefeld practitioner Dr. Gerson, in collaboration with Dr. Sauerbruch and his assistant Dr. Herrmannsdorfer, appears to be successful in lupus. In an article in the *Deutsche medizinische Wochenschrift,* Privatdozent Bommer and Privatdozent Bernhard report the results that they have secured, during the past two years, in about 150 patients with lupus treated in the Lupus-Heilstätte in Giessen (director, Professor Jesionek). According to their observations, often within a few days after the beginning of the dietary therapy a retrogression of the swelling and a change in the color of the area surrounding the lupus nodule become noticeable. The bluish red color is replaced by a delicate, light redness, which surrounds the lupus infiltrate in the form of a small wreath. The lupus focus as a whole flattens out; then the individual nodules of the surrounding area are absorbed and disappear. With the aid of light treatment a cure is effected. Lupus of the mucous membranes reacts to the dietary therapy possibly still better than lupus of the skin. Also lupus foci of the nasal mucosa, the hard palate, the pharynx and the larynx have been cured by means of dietary treatment. The lupus foci about the gums of the teeth offer the most resistance. Here treatment of the foci with carbon dioxide snow for from one to two seconds had a favorable effect. After two or three applications, an absorption of the lupus infiltrates was observed. Also other experimenters have reported favorable results in lupus. On the contrary, the good results reported in other types of tuberculosis are viewed with suspicion. At the close of the article, Prof. Felix Klemperer, the well known tuberculosis expert of Berlin, gives his opinion of the value of dietary treatment in the following words: "The Gerson-Sauerbruch diet appears to possess remarkable curative value in skin tuberculosis and lupus. Its effects in surgical tuberculosis are less marked and require further substantiation. That it accomplishes very much in pulmonary tuberculosis is as yet not proved, and from the reports received thus far it does not seem probable."

Unfavorable results in pulmonary tuberculosis are reported by Dr. Schwalm from the Berlin Lungenheilstätte "Schöneberg," in the *Klinische Wochenschrift,* number 24. His article closes with the following statements: 1. Of the twenty patients treated by us with the Gerson diet, not a single one presented demon-

strable improvement in the lungs. 2. We could not observe in our patients any objective changes that we could interpret as evidence of a changed reactivity or detoxification. 3. The increases in weight were only such as we are in the habit of expecting as a result of treatment in a sanatorium. 4. For putting on weight, cod liver oil with phosphorus appeared to be the most important factor, but that is an old and well tried remedy in the treatment of tuberculosis. 5. We have not been able to discover that the Gerson diet is superior to the diet commonly used at German sanatoriums, which also takes due account of the vitamins (milk, fruit, vegetables). In case an investigation on a wide scale is made of the Gerson diet in tuberculosis, one should see to it that experienced phthisiologists, such as those who have been directors of large sanatoriums for many years, are called on to pass judgment on the results secured.

Is Darwinism Overthrown?

In an article in the *Deutsche medizinische Wochenschrift*, Prof. Friedrich Maurer, occupant of the chair of biology at the University of Jena, opposes the view that darwinism is no longer in vogue and that the most recent researches have overthrown the ideas of Darwin. He sets forth all that Darwin has accomplished and discusses the latest developments and modifications of his theories, in which connection he says: "All the various paths that biologic research has followed since Darwin concern certain special fields. None of them deal with natural phenomena as a whole, as does Darwin's theory. That natural selection and the battle for existence are actually of the greatest importance for the development of the animal and the vegetable kingdoms no unprejudiced scientific investigator will deny. By no means do the results of the theories of hereditary transmission, of experimental biology and of internal secretion, including hormones and vitamins, constitute a refutation of the knowledge that Darwin's theory has brought us. I have no intention of belittling the various other paths of research. They have brought us much valuable new material, but they cannot undermine the theory of evolution and the theory of the origin of species. It looks as if the immense material that has been placed at our disposal, in a thoroughly digested form, by Darwin, Gegenbaur and Haeckel, in support of the darwinian theory, is not sufficiently recognized by our present-day contemporaries. It is my hope and desire that further research may succeed in opening up vistas of the realms that lie just beyond the thought world depicted by Darwin, which offers unquestionably the most far-seeing conception of living nature on our earth."

ITALY

(From Our Regular Correspondent)

Oct. 10, 1929.

The Campaign Against Malaria

Professor Pecori and Dr. Esclar have published in the *Rivista di malariologia* the results of the antimalaria campaign carried on in the Ager Romanus, during the year 1928. The campaign consisted in medical aid given those affected with the disease; the administration of quinine used curatively and prophylactically; destruction of larvae; capture of the winged forms of anopheles; construction of special stables, and publicity campaigns. There were 2,373 cases of malaria reported, with 1,057 cases of malignant tertian infection and nine deaths. These figures show an improvement in the situation as compared with the preceding years.

The Increase in the Population of Italy

The Istitute centrale di statistica has published the following data pertaining to the growth of the population of Italy. In 1700, the total population of Italy was 16,477,000, with a density of 57.5 inhabitants per square kilometer of territory. In 1800, the population had increased to 18,125,000 inhabitants (63.2 per square kilometer); in 1825, to 19,721,000 (68.8 per square kilometer); in 1852, to 24,384,000 (85 per square kilometer); in 1872, to 26,801,000 (93 per square kilometer); in 1901, to 32,475,253 (103.3 per square kilometer). In 1928, the population was 41,173,000, which includes the inhabitants of the countries annexed since the war, and is equal to 132.8 inhabitants per square kilometer of territory.

Congress of Health Officers

The twelfth Congresso dei medici condotti d'Italia, under the chairmanship of Dr. Lusignoli, member of parliament, was held at Cagliari. Dr. Granata presented a communication on "Trachoma in Sardinia" and Professor Mura gave an account of the incidence of trachoma in other regions of Italy. Professor Binaghi discussed echinococcosis in Sardinia. Drs. Del Bene and Bonifazi reported the progress of the antituberculosis crusade. Two papers were presented on the antimalaria campaign, one by Dr. Crucen for Sardinia and one by Dr. Lusignoli for the Province of Rome. Class interests were then discussed, Dr. Trulli offering a paper on health insurance, while Dr. Cosi discussed rest treatment. The Associazione dei medici condotti had announced a competitive contest in social medicine. The gold medal was bestowed on Dr. Lombardi, health officer for Morgone (Brindisi). Rome was chosen as the next place of meeting.

The Sanitary Service in the "City of the Vatican"

The governor of the "City of the Vatican" is organizing the sanitary service of the new papal state. With regard to the administration of public hygiene, especially in connection with pilgrimages or other large gatherings of people, the laws and the regulations in force in Italy and in the city of Rome will be applied. Of the sanitary service proper, Professor Milani was appointed director. The sanitary corps of the Vatican, which has heretofore included five permanent and about twenty casual physicians, will be augmented. The pharmacy will be moved to larger quarters with more modern equipment. The first-aid service will be reorganized, and a sanitary crew will be created and possibly placed under the direction of the Order of Malta. A clinica interna will be established, which will have several departments, among others a complete dental department.

The Dental Clinic in Rome

The American philanthropist George Eastman has given the Italian government one million dollars with which to establish at Rome a dental clinic similar to that in Rochester, N. Y. Work will be begun soon. In compliance with the donor's request, the new clinic will be a center for postgraduate work in dentistry, and one of its chief functions will be the spread of the importance of dental prophylaxis from the standpoint of social hygiene.

Quackery in the Sanitary Professions

In application of the new and more rigorous regulations established by the ministry of the interior, during the second quarter of the current year 631 persons were reported to the judicial authorities for illegal practice of the sanitary professions. Seventy-six were charged with having practiced medicine or surgery illegally; seventy-three were summoned for the illegal practice of dentistry, forty-five for unlawful veterinary practice, 301 for the illegal practice of pharmacy, and 116 for abuses in obstetrics.

International Congress of Surgery

The eighth International Congress of Surgery, held at Warsaw, was attended by several eminent clinical surgeons of Italy. Professor Chiasserini of Venice presented a paper on the subject "The Causes and the Mechanism of Postoperative Embolism." In the discussion that followed, Professor Giordano and Professor Donati participated. Baldo Rossie, senator, and Professor Sacconi reported on the results they had secured

in their series of cases in which they had performed gastric resection in the treatment of ulcer of the stomach and of the duodenum.

Physical Education in the Navy

The minister of the marine has sent to the officers of the navy a circular letter in which he emphasizes the desirability of the officers—especially the young men, taking more interest in sports. The marines should all take part in the exercises pertaining to physical education. It should be held before the men that the chief purpose is not to train champions but to improve the health and physique of the masses.

Annual Meeting to Discuss Thalassotherapy

The thalassotherapeutic section of the Associazione di climatologia e idrologia met recently at Grado under the chairmanship of Professor Ceresole. Drs. Nanni and Magni and Professor Pullé presented papers on the organization of sea baths in the temporary colonies, in the hospitals and in the camps (hospitals at the seaside, school colonies). In the discussion that followed the presentation of the papers, Professor Pisenti of Perugia opposed the creation of temporary colonies, affirming that they had no real value. The question was studied objectively by the conventionists, and on the basis of the results of numerous observations, it was concluded that the temporary colonies have an unquestionable value, especially from the prophylactic point of view. A resolution was, however, passed, and approved likewise by Professor Pisenti, to the effect that greater care should be taken in the selection of children to be sent to the colonies for sea-bath treatment.

Professor Casagrandi of the University of Padua presented a communication on the subject "Healthy Air and Diseased Air."

Professor Ceresole offered four communications on the following subjects: (1) practical measurements of ultraviolet solar rays; (2) the solar dermosensitometer; (3) further data on the weight curve of children at the seaside in summer; (4) the need of a strict hygienicosanitary surveillance of seaside colonies, and especially of private camps.

Further communications were presented by Dr. Magni, Professor De Francesco, Professor Piccinini, and others. The next meeting of the society will be held in Trieste.

VIENNA

(From Our Regular Correspondent)

Oct. 8, 1929.

Measures Against the Increased Incidence of Rabies

As a consequence of the numerous notifications of bite injuries, followed by attacks of rabies, in Austria, the ministry of public health took occasion to publish a leaflet containing various "criteria and instructions," which was sent out to various corporations and official boards. The instructions are to the following effect: Two groups of patients requiring vaccination must be sharply distinguished: (1) those with bites on the head, and (2) those with bites on other parts of the body. For the second group the method of treatment employed is that of Hegyös with diluted vaccine, namely: thirteen inoculations in fourteen days. Those with head injuries require an additional inoculation after the method of Alivisatos (ethereal extract of the brain of the rabid animal), which necessitates six inoculations in six days, so that these would receive, all told, nineteen inoculations in fourteen days. The authorities are instructed to examine twice all animals that have bitten a person and are suspected of being rabid: (1) as soon as possible after the biting has occurred, and (2) fourteen days after the bite was inflicted. In the case of bites on the head, a second examination is necessary after an interval of a week, because it has been observed that in animals rabies often breaks out a week after their biting craze. All persons bitten should be brought to the Staatliche Schutzimpfungsanstalt gegen Wut, in Vienna, for treatment. In the case of head lesions (bites on the face), which experience has shown to be much more dangerous, the protective inoculation should be instituted under all circumstances without reference to the immediate result of the veterinary examination of the animal, and after a week the animal is again examined. If the animal is found to be unaffected by rabies, the inoculation is interrupted. After a further interval of a week, the animal should be examined again. If it is now found to be rabid, the interrupted protective inoculations should be resumed. In the case of bite injuries of parts of the body other than the head, the biting animal must be examined at the earliest possible moment. If it is not rabid, the protective inoculation will be omitted. Fourteen days later, the animal must be examined again, and on the result of this examination will depend whether or not the patient shall be inoculated. If the saliva of an animal suspected of being rabid comes in contact with a mucous membrane or the abraded skin of a person, such contact must be considered as an injury.

The animals that in Austria are subject to rabies are dogs, cats, foxes, horses and cattle. If in any region an animal has been recognized as rabid, all bites in that area must be regarded as suspicious. If in that region any one is bitten by an animal that cannot be examined by a veterinarian, such person should be given protective inoculation. It is to the interest of any person bitten to keep himself informed in regard to the later health condition of that animal in order, should occasion arise, to secure treatment in due season. Furthermore, the authorities are instructed to retain under supervision for a whole year every patient treated in the Schutzimpfungsanstalt (vaccination institute), in order to record the fate of the patient and the result of the inoculation method employed. The issuance of the foregoing instructions to the authorities throughout the country was thought necessary because, some time ago, in a certain province of the republic of Austria, inoculation of the whole population became necessary, and, as rightly timed prophylaxis, prevented a great disaster; but the inoculation was not carried out until the Central Institut in Vienna issued urgent instructions to that effect.

Increase in the Number of Medical Students

In the summer semester of 1929, the number of medical students at the University of Vienna again showed an absolute increase. As a rule, it is during the winter semester that the number of students increases, on account of the greater length of the winter term—from October to April, whereas the summer semester comprises only three months. During the summer semester of 1929, the number of students taking regular courses was 2,539, of whom 406 were women (16 per cent); in addition, there were fifty-eight students taking special courses, of whom sixteen were women (25 per cent). These figures do not include the number of graduate physicians taking postgraduate courses. Of this class of students, there were about 400 here during the summer semester. At least 120 of the graduate students were from the United States; they studied and worked in the clinics of Vienna for several months. It is deserving of mention also that a large number of Egyptians studied in Vienna, matriculating in the first semester; there were also a number of Hindus.

Physical Examination of Athletes

About a year ago, a special department was created for the examination of all young persons who wished to participate in any form of sport activity. The movement concerns chiefly the working classes, and more than 3,000 young men and women, ranging in age between 15 and 24, have been examined thus far. The results of the examinations are a great surprise, for more than 50 per cent of the persons who engage in sport activities appear to present defects of such a nature as to make such participation inadvisable. The examination comprises a careful roentgenologic examination of the body, especially of the heart, lungs, and gastro-intestinal tract, and a careful inspection and functional testing of the organs of circulation and respiration,

together with an examination of the eyes and the ears, and a urinalysis. Further, a very careful personal history is taken, in order to ascertain the habits and the reactions of the examinee to diseases and forms of exertion. Gynecologic examinations or consultations for women who take part in sports are held twice a week. The most frequent obstacles to participation in sports lie in disorders of the lungs and the heart, and not infrequently disorders are discovered of the existence of which the patient was not even aware. Anomalies of the spine, disease of the tonsils, and flatfoot and sagfoot are very frequent, the last two in workmen. In women pronounced hysteria was a frequent condition; these patients were usually prohibited from mountain climbing and from swimming in other than quiet waters. It must be emphasized, however, that the women through participation in sport have improved very much. Likewise, in men a marked decrease in addiction to smoking and drinking has resulted from their interest in sport.

As a result of the observations made during the physical tests, the sport committees, to which wide influence and authority are accorded in Austria, have decreed that in contests that take place according to the rules of these committees only such athletes may participate as have submitted to a careful examination before the examining board and have been found to be in good health. No charge is made for the examination. As far as possible, two examinations of each individual are made each year, the first being the "fundamental examination" and the second the control examination. The goal that has been set is to obtain and register a complete record of every athlete or follower of sports, covering his whole career as an athlete. It is an interesting fact that especially football players and those who engage in heavy athletics endeavor to avoid the examination, if they are "professionals," because they fear the results.

JAPAN

(From Our Regular Correspondent)

Nov. 2, 1929.

Japanese Women Delegates to the Pan Pacific Science Conference

Delegates to the Pan Pacific Science Conference which opened, October 28, in Kyoto, are: Miss T. Yasui, dean of the Tokyo Girls' College; Miss A. Hoshino, chief of the Tsuda Girls' English Literature College; Miss T. Mitani, manager of the Girls' College; and Miss M. Tsuji, chief secretary of the Japan Young Women's Christian Association. The problems to be considered concern the domestic and social life of the country.

Schick Tests

The yearly increase in the number of cases of diphtheria in Japan clearly shows the neglect of preventive measures against the disease. Prof. Dr. Kusama, who is in charge of the department of preventive medicine of the Keio Medical College, carried out Schick tests on 8,000 school children in Tokyo in taking general measures for the prevention of diphtheria. The results of his study on the epidemiology of the disease and application of the measures resorted to in controlling it will be published later.

Personal Items

A garden party was given in honor of Mrs. Woodrow Wilson by Prince Tokugawa and Viscount Shibuzawa, October 5, on the grounds of the St. Luke's International Hospital at Tsukiji, Tokyo. Before visiting Japan, Mrs. Wilson gave much help to Dr. Teusler, chief of the hospital, in raising the reconstruction fund of the hospital in America. She visited the headquarters of the Japan Red Cross Society, October 8.

Mrs. Miyo Shimamura, who has been practicing medicine in Tokyo, has been appointed chief of the India-Burma Medical Hall at Rangoon, Burma. She graduated from the Tokyo Girls' Medical College in 1917. She left Kobe on the S. S. *Genoa*, September 30, accompanied by her husband and family.

Miss Tomiko Wada, professor of psychology in the Japan Girls' College, was married to Dr. T. Takanaga, October 17. She graduated from the college in 1917; then went to America to pursue her studies in the Columbia and Johns Hopkins universities. She returned home in 1922 and took further work in the Kyushu Imperial University.

Dr. H. Kusama, who resigned from his post at Paris and Geneva as the permanent health commissioner to the League of Nations, arrived at Kobe, August 15.

In September, Drs. Takase and Takagi, professors in the Nagasaki Imperial Medical College, went to China to negotiate with the Chinese authorities on exchange scholarships and to inspect their institutions and system of medical education.

Dr. M. Takeuchi was appointed chief of the Tokyo Hygienic Experimental Station in September to take the place of Dr. C. Yokota.

Baron S. Hirayama, president of the Japan Red Cross Society, who had been ill since last summer, died, September 25, at the age of 76. Before his death he was awarded the Grand Cordon of the Rising Sun by the emperor in honor of his achievements. Prince Tokugawa has been appointed to his post.

Dr. G. Kato, professor in the Keio Medical College, who attended the International Hygienic Conference in America, arrived at Yokohama, September 27.

Dr. K. Ichika, professor of livestock breeding in the Hokkaido Imperial University, recently had all of his scientific materials and specimens burned in a fire at the university. The collection was chiefly on carcinoma. He had been considering the establishment of an anticancer society in Hokkaido. The Cancer Society of Roumania had previously appointed him an honorary member of the society and had asked his permission to translate the papers which he read at the International Conference in London in 1928.

Dr. Shiga, chief of the medical department in the Keijo Imperial University, Chosen, has been nominated for the presidency of the Keijo Imperial University. Mr. Matsuura recently left to succeed Dr. Daikubara as president of the Kyushu Imperial University.

Marriages

JOHN HARDIN CARTER, Beaumont, Texas, to Miss Abbie Julia Johnson of Pensacola, Fla., November 6.

EARL LE ROY BRAND, Webster Groves, Mo., to Miss Virginia Kier Carter of St. Louis, November 2.

EARLE T. DEWEY, Little Falls, Minn., to Miss Margaret Mary Bloom of Minneapolis, in August.

ANDREW E. OGDEN, Trenton, N. J., to Miss Edith M. Bashore of Philadelphia, October 20.

THEODORE M. SLEMMONS, Argyle, Wis., to Miss Mathilda M. Martin, at Medford, October 16.

FREDERICK Y. DURRANCE, Beaumont, Texas, to Miss Sybil Rodick of New Orleans, November 7.

LAWRENCE E. PIERSON, Chicago, to Miss Alma Gladys Hill at Stanhope, Iowa, October 22.

WARD A. DE YOUNG, Chicago, to Miss Abigail Robinson at Saugatuck, Mich., October 26.

JULIUS P. KISSEL to Miss Mary Nolden, both of Centralia, Ill., at St. Louis, October 16.

CLAUS T. DROEGE to Miss Irma Louise Melcher, both of Horicon, Wis., October 3.

LEOPOLD BRAHDY to Miss Dorothy Kohnstamm, both of New York, October 10.

LOUIS P. GOOD, Rochester, Minn., to Miss Dorothy Dean at St. Paul, October 31.

MEYER JEROME KARSH, Brooklyn, to Miss Dorothy Skon of New York, June 23.

MARK HENRY WALL, Superior, Wis., to Miss Anna Sokolnikoff, August 11.

EDITH MACBRIDE, Sharon, Pa., to Mr. Allen Tyler Dexter, November 16.

Deaths

Victor Clarence Vaughan ⊕ a former president of the American Medical Association and for many years dean of the University of Michigan Medical School, died at his home in Richmond, Va., November 21, aged 78. Dr. Vaughan was born in October, 1851, at Mount Airy, Mo. Graduating at Mount Pleasant College in 1872, he went on to the University of Michigan, where he obtained an M.S. degree in 1875, a Ph.D. in 1876, and the M.D. in 1878. After receiving a master's degree, Dr. Vaughan became an assistant in the chemical laboratory at the University of Michigan, a position which he held for eight years. He was lecturer in medical chemistry for a year, assistant professor of physiology for three years, professor of physiology and pathologic chemistry and associate professor of therapeutics and materia medica for four years, director of the hygienic laboratory and professor of hygiene and physiologic chemistry for twenty-two years, and dean of the University of Michigan Medical School from 1891 to 1921. He was then made emeritus professor of hygiene and physiological chemistry. During his forty-five years' service as teacher and administrator Dr. Vaughan took a great part in making his alma mater one of the best known medical schools. In addition, he served for three terms as a member of the Michigan State Board of Health and for many years as state epidemiologist. In 1876 he published "Osteology and Myology of the Domestic Fowl"; in 1879, a Textbook of Physiological Chemistry; later, in collaboration with Professor Novy of the University of Michigan, a widely read treatise on ptomaines and leukomaines and cellular toxins; and in 1913, in collaboration with his sons Victor C., Jr., and J. Walter Vaughan, articles on protein split products. In 1922, in collaboration with Henry F. Vaughan, his son, and George T. Palmer, he published "Epidemiology and Public Health," in three volumes. His last book, "A Doctor's Memories," published in 1926, dealt in a charming manner with his own experiences during a long and distinguished career. Dr. Vaughan contributed more than 150 original papers to current medical and scientific literature, and was managing editor of the *Journal of Laboratory and Clinical Medicine* from 1915 to 1923.

VICTOR CLARENCE VAUGHAN, M.D., 1851-1929

During the Spanish-American War, Dr. Vaughan served in the Santiago campaign with the thirty-third Michigan Infantry until he was appointed division surgeon. He was a member of the commission appointed to investigate the widespread outbreak of typhoid in the camps, the report of which added much to the epidemiology of typhoid. Dr. Vaughan prepared, in most part, this extensive report, and transmitted it to the War Department, his colleagues Reed and Shakespeare, in the meanwhile, having died. During the World War he was awarded the distinguished service medal. He was in charge of the division of communicable diseases in the Surgeon General's Office.

Dr. Vaughan served the American Medical Association over a long period of years in many capacities. He was a member of the House of Delegates in 1902, 1903, 1904 and 1906, and was chairman of the Reference Committee on Medical Education in 1904, and chairman of the Section on Pathology and Physiology in 1902-1903. From 1904 to 1913 he was a member of the Council on Medical Education, and chairman of the Council on Health and Public Instruction from 1919 to 1923. In the last capacity, he spent about a year at the headquarters of the American Medical Association, assisting in the establishment of *Hygeia*. Dr. Vaughan was President of the American Medical Association in 1914-1915. He was president of the Association of American Physicians in 1908-1909, and in 1928 was awarded the Kober medal. He was a member of the Michigan and Colorado State Medical societies, a member of the National Academy of Sciences and American Philosophical Society, chairman of the division of medical sciences of the National Research Council, and a member of both the French and the Hungarian societies of hygiene. Dr. Vaughan was awarded honorary degrees by the University of Michigan, the University of Western Pennsylvania, University of Missouri, Jefferson Medical College and Central College. He was a Knight of the Legion of Honor of France. In the more than thirty years that Dr. Vaughan was a practitioner and epidemiologist of the Michigan State Board of Health, he acquired a reputation far beyond his own state for conducting investigations of outbreaks of communicable diseases and for scientific research. Dr. Vaughan was a beloved teacher, a great leader, an idealist in public health. His contributions to scientific medicine were significant. His sons have already achieved fame in the science he loved so well and throughout the world his pupils bear testimony to his inspiration. His name and his memory will continue to inspire through centuries to come.

Benjamin G. W. Cushman ⊕ Auburn, Maine; Medical School of Maine, Portland, 1891; member of the American College of Surgeons; formerly secretary of the city board of health; for many years on the staff of the Central Maine General Hospital, Lewiston; aged 66; died, October 21, of carcinoma of the sigmoid.

Peter Noe, Jr. ⊕ Willsboro, N. Y.; New York Homeopathic Medical College and Flower Hospital, 1918; county coroner and member of the county board of health; served during the World War; aged 38; died, September 28, at the Physicians Hospital, Inc., Plattsburg, of bronchopneumonia.

Simon Francis Cox ⊕ Lowell, Mass.; Harvard University Medical School, Boston, 1900; member of the New England Society of Psychiatry; formerly superintendent of the Albany (N. Y.) Hospital; aged 55; on the staff of the Ring Sanatorium and Hospital, Arlington, where he died, October 17.

Michael Joseph Spranger, Detroit; Detroit Homeopathic Medical College, 1871; member of the Michigan State Medical Society; Civil War veteran; for many years on the staff of the Grace Hospital; aged 84; died, October 24, of intestinal obstruction and gastric carcinoma.

Joseph Lucius Gaston, Montgomery, Ala.; Medical Department of Columbia College, New York, 1885; member of the Medical Association of the State of Alabama; formerly bank president and president of the board of education; aged 69; died, October 16, of heart disease.

William Albert Shelton ⊕ Kansas City, Mo.; University Medical College of Kansas City, 1904; member of the American College of Surgeons; on the staffs of the Kansas City General Hospital and the Research Hospital; aged 50; died, October 21, of heart disease.

Grant McKeehan, Dekoven, Ky.; Hospital College of Medicine, Louisville, 1903; member of the Kentucky State Medical Association; aged 56; was drowned, October 17, when the automobile in which he was driving plunged off a ferry boat into the river.

Winston W. Davis, Pelahatchee, Miss.; Medical Department of the Tulane University of Louisiana, New Orleans, 1898; member of the Mississippi State Medical Association; formerly mayor of Collins; aged 58; died, October 11, in a hospital at Jackson.

Peter J. Calvy ⊕ Fond du Lac, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1903; member of the

American College of Physicians; on the staff of St. Agnes' Hospital; aged 54; died in October at a sanatorium in Milwaukee.

Le Roy Anderson Wescott ⊕ Cherokee, Iowa; State University of Iowa College of Medicine, Iowa City, 1901; formerly county coroner; served during the World War; on the staff of the Sioux Valley Hospital; aged 58; died, September 27.

Alfred Cramer, Jr., ⊕ Camden, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1898; formerly on the staff of the Cooper Hospital; aged 58; died, October 18, at Moorestown, of carcinoma of the prostate and arteriosclerosis.

Benn W. Summy, Washington, D. C.; Georgetown University School of Medicine, Washington, 1886; aged 82; died, October 18, at the Walter Reed General Hospital, as the result of injuries received in an automobile accident last March.

Augusta Helle, St. Louis; National University of Arts and Sciences Medical Department, St. Louis, 1913; member of the Missouri State Medical Association; aged 54; died, October 7, at the Barnes Hospital, of carcinoma of the cervix.

George B. Tibbetts, Orrington, Maine; Medical School of Maine, Portland, 1878; member of the Maine Medical Association; formerly member of the school board and board of health; aged 75; died, August 13, of arteriosclerosis.

Lawson V. Cloninger, Statesville, N. C.; North Carolina Medical College, Charlotte, 1900; member of the Medical Society of the State of North Carolina; aged 54; died, November 3, of gunshot wounds inflicted by his roommate.

Joseph H. Low, Welcome, Va.; Chicago Homeopathic Medical College, 1888; formerly professor of theory and practice of medicine at the Hahnemann Medical College and Hospital; aged 62; died, November 2, of heart disease.

Veolo Oglesby Caruthers, Ferrell, Va.; Medical College of Virginia, Richmond, 1879; aged 75; died, October 4, at St. Elizabeth's Hospital, Richmond, of hypertrophy of the prostate, chronic nephritis and bronchopneumonia.

William Farrington Jones ⊕ San Rafael, Calif.; Cooper Medical College, San Francisco, 1885; formerly secretary of the Marin County Medical Society; on the staff of San Rafael Cottage Hospital; aged 69; died, August 15.

Louis Daniel Mignault, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1880; secretary and professor of descriptive anatomy, University of Montreal Faculty of Medicine; aged 73; died, August 24.

Frank William Klocke, Chicago; Washington University School of Medicine, St. Louis, 1908; member of the Illinois State Medical Society; aged 60; died, October 2, of streptococcus septicemia due to an infected tooth.

George Ringland Conger, Taylorstown, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1892; member of the Medical Society of the State of Pennsylvania; aged 64; died, October 22, of cerebral hemorrhage.

Katherine Dempsey Hyde ⊕ Chicago; Harvey Medical College, Chicago, 1902; formerly on the staff of the Woman's and Children's Hospital; aged 62; died, October 15, at the Henrotin Hospital, of bronchial asthma.

John Joseph Fitzgerald ⊕ Haverhill, Mass.; Baltimore Medical College, 1903; on the staff of the Hale Hospital; aged 52; died, October 19, of chronic nephritis, cerebral hemorrhage and arteriosclerosis.

John Richard Cunningham ⊕ Tonopah, Nev.; Rush Medical College, Chicago, 1891; aged 63; died, July 23, at the Letterman General Hospital, San Francisco, of arteriosclerosis and chronic myocarditis.

George Samuel Wilcox, Mulvane, Kan.; Kentucky University Medical Department, Louisville, 1904; member of the Kansas Medical Society; aged 56; died, October 1, of cerebral hemorrhage.

John Francis Harkins, Worcester, Mass.; Harvard University Medical School, Boston, 1900; member of the Massachusetts Medical Society; aged 54; died, October 19, of cerebral hemorrhage.

Elmer Eugene Ladd, Milton Mills, N. H.; Dartmouth Medical School, Hanover, 1896; member of the Maine Medical Association; aged 60; died in October, of acute dilatation of the heart.

John M. Robinson, Oakland, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1860; Civil War veteran; aged 94; died in October at the Veterans' Home, of senility.

Roger Sherman York, Boston; Bellevue Hospital Medical College, New York, 1892; aged 75; died, June 15, at Charlton, Mass., of carcinoma of the pylorus and chronic valvular heart disease.

William Henry Perry ⊕ Cleveland; Chicago Homeopathic Medical College, 1897; Medico-Chirurgical College of Philadelphia, 1905; aged 60; was found dead, November 1, of heart disease.

Mahlon Fremont Baldwin, Marion, Ind.; Eclectic Medical Institute, Cincinnati, 1884; member of the Indiana State Medical Association; aged 72; died, October 14, of cerebral hemorrhage.

Horace Hormell Sheets ⊕ Oregon, Ill.; Rush Medical College, Chicago, 1902; served during the World War; aged 51; died, October 25, in a hospital at Dixon, of cerebral hemorrhage.

William B. Mead, Lawton, Okla.; Rush Medical College, Chicago, 1872; member of the Oklahoma State Medical Association; aged 79; died, September 12, of intestinal toxemia.

Samuel M. Campbell, Omaha; Hahnemann Medical College and Hospital, Chicago, 1881; aged 75; died, October 15, at the Lord Lister Hospital, of acute dilatation of the heart.

James Arthur Rowley, Chicago; University of Michigan Medical School, Ann Arbor, 1926; aged 26; died, November 3, at Wausau, Wis., of endocarditis and renal infarction.

Clarence Lee Poole, Atlanta, Ga.; Atlanta Medical College, 1886; aged 64; died, November 2, in a local sanatorium, of injuries received when struck by an automobile.

W. Hawkins Ingram ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1919; member of the city health department; aged 60; died, October 14, of sinusitis.

Hayden Frederick Threlkeld, Irene, Texas; Louisville and Hospital Medical College, 1908; served during the World War; aged 45; died, October 19, of heart disease.

James L. Taylor, Springfield, Ill.; Rush Medical College, Chicago, 1877; member of the Illinois State Medical Society; aged 76; died, October 17, of chronic myocarditis.

William S. Boyd, Salters Depot, S. C.; University of Maryland School of Medicine, Baltimore, 1886; aged 67; died, September 30, of acute dilatation of the heart.

John Hicks Neal, Pulaski, Tenn.; Vanderbilt University School of Medicine, Nashville, 1892; aged 65; died, September 19, at Nashville, of cerebral hemorrhage.

Alvin L. Bailey, Chesaning, Mich.; Medical College of Ohio, Cincinnati, 1887; aged 70; died, October 30, at the Hurley Hospital, Flint, of pyonephrosis and uremia.

Samuel M. Stocker, Fergus Falls, Minn.; Medical Department of the University of the City of New York, 1885; aged 72; died, October 19, of catarrhal jaundice.

William L. Galloway, Darlington, S. C.; Memphis (Tenn.) Medical College, 1869; aged 88; died, March 5, of chronic bronchitis and hypostatic pneumonia.

Clara F. Tyrrell, Edmonds, Wash.; Medical Department of the University of Wooster, Cleveland, 1886; aged 73; died, October 10, of cerebral hemorrhage.

Eleanor Capitola Reed, Peru, Neb.; Northwestern University Woman's Medical School, Chicago, 1885; aged 66; died, September 5, of diabetes mellitus.

Winfield W. Scott, Pleasant View, Tenn. (licensed, Tennessee, 1889); formerly bank president; aged 81; died, September 11, of pulmonary tuberculosis.

Annie Louise Alexander ⊕ Charlotte, N. C.; Woman's Medical College of Pennsylvania, Philadelphia, 1884; aged 65; died, October 15, of pneumonia.

Thomas H. B. Clutter, Crestline, Ohio; Columbus Medical College, 1879; Civil War veteran; aged 88; died in October of nephritis and bronchopneumonia.

William Joseph Gates, Arlington, Calif.; Kansas City (Mo.) Homeopathic Medical College, 1895; aged 62; died, July 4, of cerebral hemorrhage.

Ralph Greenlief Hersom ⊕ La Junta, Colo.; University of Louisville (Ky.) School of Medicine, 1910; aged 49; died in September, of angina pectoris.

Wilber Emsy Thomson ⊕ Manistique, Mich.; Ohio State University College of Medicine, Columbus, 1914; aged 39; died, October 19, of heart disease.

Ernest Hartley Little, Minburn, Iowa; University of Illinois College of Medicine, Chicago, 1902; aged 51; died, November 5, of heart disease.

Joseph Halloway Self, Kirksey, S. C.; University of Georgia Medical Department, Augusta, 1893; aged 58; died, October 27, of heart disease.

Charles A. Gibson, Pottsboro, Texas; Memphis (Tenn.) Hospital Medical College, 1891; aged 69; died, October 14, at Sherman, of carcinoma.

Charles Livingston Woods, Lowell, Mass.; Boston University School of Medicine, 1878; aged 72; died, September 20, of cerebral hemorrhage.

Carlos J. Miller, White Plains, N. Y.; New York Homeopathic Medical College, 1874; aged 79; died, October 15, at Goshen, of nephritis.

David H. Decker, Wisconsin Veterans Home, Wis.; Bellevue Hospital Medical College, New York, 1867; aged 86; died, May 23, of senility.

Oscar V. Sessions, Los Angeles; Chicago Medical College, 1882; aged 77; died, September 25, of cerebral hemorrhage and chronic myocarditis.

John Daniel Rupp, Shoemakersville, Pa.; Bellevue Hospital Medical College, New York, 1877; aged 75; died, August 23, of diabetes mellitus.

Andrew Jackson Tucker, Sedalia, Mo.; St. Louis College of Physicians and Surgeons, 1896; aged 69; died in September, of arteriosclerosis.

Harry Hall Hartung ⊕ Boston; Yale University School of Medicine, New Haven, 1896; aged 54; died, September 4, of heart disease.

James C. Blair ⊕ San Jose, Calif.; University of California Medical School, 1905; aged 49; died, August 28, of cerebrospinal sclerosis.

Frank Seely Emmal, San Francisco; Cooper Medical College, San Francisco, 1901; aged 70; died, August 6, of carcinoma of the prostate.

Charles C. Hutton, Bowling Green, Ky.; Chicago Homeopathic Medical College, 1900; aged 54; died, September 17, of heart disease.

William H. Ross, Jerseyville, Ill.; University of Louisville (Ky.) School of Medicine, 1868; aged 97; died, October 12, of pneumonia.

John P. Franz, Indianapolis; American Medical College, Indianapolis, 1897; aged 69; died, October 18, of carcinoma of the intestine.

William A. Bedford, Thornton, Texas; Louisville (Ky.) Medical College, 1889; aged 68; died, July 10, of cerebral hemorrhage.

Minnie B. Lang, Eads, Colo.; Eclectic Medical University, Kansas City, Mo., 1900; aged 69; died, October 8, of cerebral hemorrhage.

William G. Weber ⊕ Round Rock, Texas; Barnes Medical College, St. Louis, 1899; aged 55; died, April 25, of cerebral hemorrhage.

Richard K. Fleming, Pittsburgh; Hahnemann Medical College of Philadelphia, 1882; aged 70; died, October 22, of chronic myocarditis.

Oscar B. Haack ⊕ Louisville, Ky.; University of Louisville School of Medicine, 1907; aged 52; died, October 3, of chronic myocarditis.

Christen K. Onsgard ⊕ Halstad, Minn.; Eclectic Medical Institute, Cincinnati, 1887; aged 66; died, October 21, of carcinoma.

Joseph Adolphe Bernier, Northbridge, Mass. (licensed, Massachusetts, 1897); aged 59; died, March 17, of cirrhosis of the liver.

Erwin M. Coss, Cattaraugus, N. Y.; University of Buffalo School of Medicine, 1884; aged 76; died, October 5, of endocarditis.

Reeve C. Pearce, Rockville, Ind.; Kentucky School of Medicine, Louisville, 1891; aged 67; died, October 10, of heart disease.

Justin R. Johnson, Lynn, Mass. (licensed, Massachusetts, 1925); aged 28; died, September 13, of bilateral renal tuberculosis.

Henry P. Holmes ⊕ Troy, N. Y.; Albany Medical College, 1875; aged 74; died, March 4, of arteriosclerosis.

William Harvey Beach, Alpine, N. Y.; Geneva Medical College, 1866; aged 88; died, September 21, of senility.

Robert W. Westmoreland, Atlanta, Ga.; Atlanta Medical College, 1875; aged 80; died in October, of influenza.

Merton E. Seafuse, Elmira, N. Y.; Baltimore Medical College, 1898; aged 59; died, May 9, of pneumonia.

Oscar Edward Bell, Parlett, Ohio; Ohio Medical University, Columbus, 1898; aged 59; died, October 9.

Thomas C. Dabney, Delaney, Ark. (licensed, Arkansas, 1903); aged 60; died, October 8.

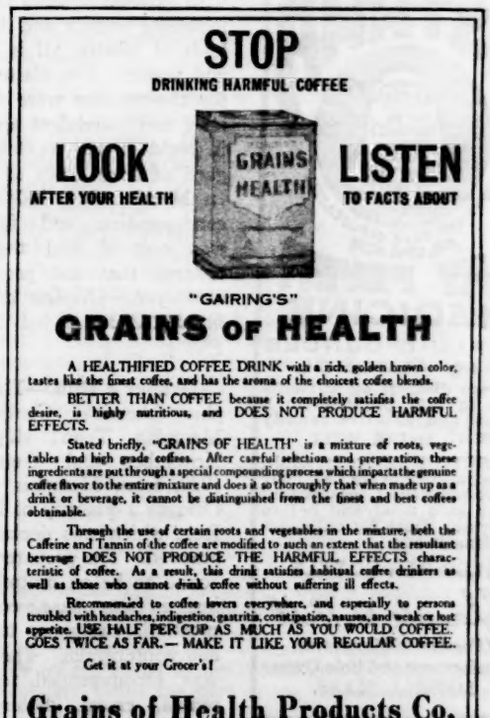
Bureau of Investigation

MORE MISBRANDED NOSTRUMS

Abstracts of Notices of Judgment Issued by the Food, Drug and Insecticide Administration of the United States Department of Agriculture

Rising Mist Salve.—Wynn's Rising Mist Company of Elmira, N. Y., consigned a quantity of Rising Mist Salve to a concern in Pennsylvania. The government officials declared the product to be misbranded. Analysis showed the salve to be essentially petrolatum with small amounts of menthol, camphor and oils of wintergreen and eucalyptus. The preparation was recommended for such conditions as neuralgia, eczema, piles, boils, lame back, cough, sore throat, pneumonia, tonsillitis, whooping cough, earache, la grippe, and a number of other conditions. These claims were held to be false and fraudulent and made in reckless and wanton disregard of their truth or falsity. In April, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16255; Issued October, 1929.*]

Grains of Health.—The Grains of Health Products Company of Wheeling, W. Va., shipped in November, 1926, into the state of Maryland a quantity of Grains of Health, which was declared misbranded. When analyzed, it was found to


STOP
DRINKING HARMFUL COFFEE
LOOK
AFTER YOUR HEALTH
GRAINS
HEALTH
LISTEN
TO FACTS ABOUT
"GAIRING'S"
GRAINS OF HEALTH
A HEALTHIFIED COFFEE DRINK with a rich, golden brown color, tastes like the finest coffee, and has the aroma of the choicest coffee blends.
BETTER THAN COFFEE because it completely satisfies the coffee desire, is highly nutritious, and DOES NOT PRODUCE HARMFUL EFFECTS.
Stated briefly, "GRAINS OF HEALTH" is a mixture of roots, vegetables and high grade coffees. After careful selection and preparation, these ingredients are put through a special compounding process which imparts the genuine coffee flavor to the entire mixture and does it so thoroughly that when made up as a drink or beverage, it cannot be distinguished from the finest and best coffees obtainable.
Through the use of certain roots and vegetables in the mixture, both the Caffeine and Tannin of the coffee are modified to such an extent that the resultant beverage DOES NOT PRODUCE THE HARMFUL EFFECTS characteristic of coffee. As a result, this drink satisfies habitual coffee drinkers as well as those who cannot drink coffee without suffering ill effects.
Recommended to coffee lovers everywhere, and especially to persons troubled with headaches, indigestion, gastritis, constipation, nausea, and weak or lost appetite. USE HALF PER CUP AS MUCH AS YOU WOULD COFFEE. GOES TWICE AS FAR.— MAKE IT LIKE YOUR REGULAR COFFEE.
Get it at your Grocer's!
Grains of Health Products Co.
WHEELING, W. VA. — Phone Wh. 151
Factory — BELLAIRE, OHIO — Phone Bellaire 27

consist essentially of roasted coffee, with chicory and some starchy material. It contained 0.45 per cent caffeine. The preparation was labeled a "Healthified Coffee." The therapeutic claims made for the product were declared false and fraudulent and in March, 1929, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed. —[*Notice of Judgment 16259; Issued October, 1929.*]

Taylor's Laxative Cold Tablets.—C. E. Jamieson and Company of Detroit, Mich., shipped in October, 1928, from Michigan to New York a quantity of Taylor's Laxative Cold Tablets that the government declared was misbranded. Each tablet was found to contain about 1 grain of acetanilide and 1/10 grain of cinchonine salicylate, with camphor, red pepper and some laxative plant drug extractives. The tablets were recommended for la grippe, coughs and neuralgia, and were said to stimulate the "general secretions, open the pores of the skin,

and work on the liver." The claims were declared false and fraudulent, and in April, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16253; Issued October, 1929.*]

Uterine Catholicon.—The Graefenberg Company of Newburgh, N. Y., shipped in May, 1928, from New York to Utah a quantity of Uterine Catholicon that was declared misbranded. When analyzed, the product was found to be a liquid containing over 11 per cent of alcohol, together with potassium sulphate and extracts of plant drugs, including aloe. The preparation was sold under the claim that it was a treatment for "Deranged Monthly Periods—Irregularities and Headache, Sallow Complexion, Leucorrhea, Dizziness, Deranged Appetite, Faintness, Acid Stomach, Pain in Kidneys," and a number of other conditions. These claims were declared false and fraudulent and in November, 1928, judgment of the court was entered, ordering that the product be destroyed.—[*Notice of Judgment 16266; Issued October, 1929.*]

Hermance's Asthma and Hay Fever Medicine.—C. A. Bell, Lowell, Mass., shipped to Concord, N. H., a quantity of Dr. M. Hermance's Asthma and Hay Fever Medicine that was declared misbranded. When analyzed, the preparation was found to consist—as do most of the asthma and hay-fever nostrums—of potassium iodide with extracts of plant material, including licorice and the alkaloids of lobelia, all in alcohol and water. The claims made for the product were declared false and fraudulent and made in reckless and wanton disregard of their truth or falsity. In March, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16272; Issued October, 1929.*]

DR. M. HERMANCE'S
ASTHMA
C.A. BELL
DR. M. HERMANCE'S ASTHMA MEDICINE
COPYRIGHT 1918 CLAUDE A. BELL
AND
HAY FEVER
MEDICINE
3½ FLUID OUNCES
14% ALCOHOL
These distressing ailments have in this prescription a prompt and effective remedy for relief. SHAKE WELL
DIRECTIONS: Dose for adult, 1 teaspoonful every half hour until relieved; 1 teaspoonful after each meal and before retiring. Dose for child, according to age.
$1.00 PER BOTTLE
Claude A. Bell
(Facsimile Signature)
Manufacturer and Sole Owner
LOWELL, MASS.

Draper's Rub.—The Memphis Chemical Company of Memphis, Tenn., shipped in November and December, 1928, from Memphis to New Orleans a quantity of Draper's Rub, which was declared misbranded. The preparation was found to be an ointment having a fatty base, containing menthol, camphor, turpentine and wintergreen. The product was recommended for pneumonia, croup, asthma, hayfever, pleurisy, tonsilits, rheumatism, and various other conditions. The claims were declared false and fraudulent and in April, 1929, judgment of condemnation and forfeiture was entered, and the court ordered that the product be destroyed.—[*Notice of Judgment 16268; Issued October, 1929.*]

Laxa-Pirin.—The Hoosier Remedy Company of Indianapolis, Ind., shipped in interstate commerce in January, 1929, a quantity of Laxa-Pirin, which the government officials declared was misbranded. When analyzed, it was found that each of these tablets contained about 1 grain of phenacetine, 2 grains of aspirin, a small amount of caffeine, a trace of aconite alkaloids and some laxative plant drug extractives. The therapeutic claims made for the product on or in the trade package were declared false and fraudulent, in that the article contained no ingredient, or combination of ingredients, capable of producing the effects claimed. In April, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16254; Issued October, 1929.*]

Nash's Croup and Pneumonia Salve.—The Nash Bros. Drug Company, Jonesboro, Ark., shipped in February, 1922, from Arkansas to Ohio a quantity of Nash's Croup and Pneumonia Salve, which was declared misbranded. When analyzed, the salve was found to consist essentially of petrolatum, with the usual amounts of menthol, camphor, sassafras and turpentine. The product was recommended for croup, pneumonia, coughs, sore throat, catarrh, whooping cough, tonsillitis, piles, boils, etc. The claims were declared false and fraudulent, and in March, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16271; Issued October, 1929.*]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DIAGNOSIS OF PONTILE HEMORRHAGE

To the Editor:—A married woman, aged 32, with her husband and two boys living, with past history negative and with both parents living and well, was seen after she had been unconscious for about fifteen minutes. She had complained, previous to unconsciousness, of being tired and a little dizzy. A hurried examination revealed the pupils fixed and contracted, breathing shallow with an inspiratory rather than expiratory effort, rapid heart beat with evidence of enlargement on percussion, and no paralysis of muscles or limbs. At the hospital the rectal temperature was found to be 112 F., checked by two trained nurses and myself, twice within five minutes after entrance. The systolic blood pressure was 80; diastolic, 0. Within ten minutes after entrance the patient became extremely cyanosed and died. Postmortem examination was not permitted. My diagnosis was embolism into the medulla and acute cardiac dilatation. Please give me your differential diagnosis. Was mine a feasible one? She may have had a stroke, but I question it. Where can I get some literature on embolism into the medulla? Please omit name and address.

M.D., Arizona.

ANSWER.—This would seem to be a definite case of pontile hemorrhage. None of the cardinal signs are lacking. The history of a short interval of vertigo followed by a sudden loss of consciousness which is associated with contracted, fixed pupils and a marked hyperpyrexia in a case which goes rapidly on to a fatal termination leaves little room for doubt as to the diagnosis. This history is unusually typical of a hemorrhage into the pons.

As to differential diagnosis, it would seem that this case is unusually free from those elements on which differences of opinion can be based. Embolism of the medulla has been suggested. However, as there is no mention of any possible source of such emboli (endocarditis, thrombi, septic processes) or of any other embolic manifestations, this diagnosis seems extremely unlikely. It is true that the information supplied does not explain the hemorrhage in a patient this young. Nevertheless such occurrences, though not common, are not a rarity and certainly are far more common than embolism without apparent source. Although there is no evidence pointing toward the presence of either syphilis or hypertension, they must be thought of as possible etiologic factors unless definite evidence against them can be presented. Academically at least a few other possibilities must be considered in differential diagnosis. However, these are readily ruled out. A cerebral hemorrhage, the usual type of apoplectic seizure, would be associated with dilated rather than constricted pupils and is not associated with such a marked hyperpyrexia, even terminally. A marked flaccidity of the extremities of one side or the other would most likely be present, and in addition a systolic blood pressure of 80 would be most unusual. Thrombosis of the vascular supply to either the medulla or the pons would be preceded by a much longer prodromal period which would undoubtedly be associated with definite signs of involvement of the medullopontile nuclei and probably of the cerebellum because of the intimate relationship of their arterial supply. A neoplasm involving the brain stem would also be much slower in development, and although the termination might come suddenly it would most certainly be preceded for several days or weeks by unmistakable signs. Acute bulbar palsy as defined by most authors includes both pontile and medullary hemorrhage. It also is referred to as acute inferior poliencephalitis, which indicates an infectious state. Cases of an infectious nature exhibit no such rapidity of progression and termination as is exhibited here and usually are obviously of an infectious nature or associated with an infectious disease (usually in childhood). This rare condition has been thought to be closely related to acute anterior poliomyelitis so far as etiology is concerned.

As to differentiating between pontile hemorrhage and a hemorrhage into the medulla, it can only be said that the contracted pupils and marked pyrexia are typical of the former and certainly the pons was primarily involved in this case. However, it would be impossible to say that the hemorrhagic process did not extend downward into the medulla and doubtless microscopic examination of these structures would indicate that it did.

Meager references to this subject are available in most neurologic textbooks. Probably H. Oppenheim's Lehrbuch der Nervenkrankheiten (Berlin, S. Karger) or A. Bruce's English translation of the same work (Edinburgh, the Darien Press) are the most valuable textbooks on this subject. The most recent related articles are:

Grönberg, A.: Beitrag zur Frage über die Klinik der Herdlasionen in der Medulla oblongata, *Acta. med. Scandinav.* **65**: 362, 1927.

Brucke, K.: Hirnstamm (Pons) Blutungen bei perniziöser Anämie, *München. med. Wchnschr.* **74**: 326 (Feb. 25) 1927.

Lami, G.: Sindrome da rammallimento pontino, *Gazz. internaz. med.-chir.* **32**: 68 (Feb. 28) 1927.

Walthard, K. M.: Ueber einen Fall von Blutung in Kleinhirn und Pons bei hochgradiger diffuser Verkalkung im Kleinhirnbezirk der Art. cerebelli posterior mit dem klinischen Bilde einer akuten multiplen Sklerose, *Schweiz. med. Wchnschr.* **58**: 963 (Sept. 29) 1928.

Winther, K.: Un cas d'occlusion (par embolie) de l'artère cérébelleuse postérieure inférieure vérifié a l'autopsie avec des douleurs et de l'hyperalgésie au froid, *Acta psychiat. et neurol.* **2**: 399-416, 1927.

Böhne, C.: Ueber die arterielle Versorgung des Gehirns, *Ztschr. f. d. ges. Anat.* **84**: 760 (Dec. 28) 1927.

Cutler, O. L.: Relation of Arteriosclerosis of Cerebral Vessels to Hypertension: Distribution of Arteries Supplying Pons and Medulla, *Arch. Path.* **5**: 365 (March) 1928.

In addition, numerous references to the older literature will be found in Oppenheim's discussion of acute bulbar paralysis.

PRURITUS VULVAE

To the Editor:—A white woman, aged 50, came to me last week complaining of itching about the clitoris. The menstrual period began at the age of 17, is regular every twenty-eight days, and is of two or three days' duration. She has five children, aged 15, 12, 10, 8 and 3 years. The itching began nine years ago. At about the third month of each of the last two pregnancies the itching entirely disappeared and did not return until four months after delivery. Her greatest discomfort comes during the last few days before the period. With the beginning of flow there is a passing relief. She thinks that her mother had a similar, though not so severe, condition. Her one sister has no such trouble. In spite of almost continuous treatment by several different physicians, her discomfort is becoming progressively worse. I am thinking of an endocrine origin. I would appreciate any advice you could give.

C. J. CRANSTON, M.D., Wakeman, Ohio.

ANSWER.—The assumption that there is an endocrine origin for the pruritus is probably correct. Since the itching disappeared during two pregnancies from the third month until long after delivery, it may be that the placenta had a neutralizing effect on whatever caused the pruritus. It is at about this time that the placenta takes on the function which the corpus luteum has during the first few weeks of gestation. The belief that a placental hormone may cause the disappearance of the affliction is purely speculative; but it may be worth while to try the use of placental extract or even ovarian follicle fluid. This treatment also is conjectural. It is assumed that an attempt has been made to find a local cause, such as kraurosis and leukoplakia, or a general cause, such as diabetes and morphinism; also that local therapy in the form of silver nitrate and calamine lotion, N. F., has been used. In some cases procaine hydrochloride injected under the involved skin helps, and in a few resistant cases treatment with roentgen rays has been curative. If there appears to be a psychic element, as there may well be after nine years, this also must be treated.

TREATMENT OF DIABETIC COMA

To the Editor:—Kindly give me the latest treatment for threatened and actual coma when the patient has been taking 100 units of insulin daily but has left off insulin for four or five days and starts in with nausea, vomiting, thirst and drowsiness. Kindly do not use my name.

M.D., South Carolina.

ANSWER.—The treatment of coma, threatened or actual, is the same as it has always been with the exception that insulin must be given in large doses, and as early as possible. While there is no set method to gage the dosage of insulin, it is generally agreed that the initial dose should be from 20 to 40 units, and that the dosage should be repeated every hour or two according to the condition of the patient. In addition, all the accessory therapeutic factors which Joslin summarizes in his textbook should be employed. The patient should be kept warm, an enema should be given, fluids should be administered in large amounts, and the heart must be sustained. The most important fact to be emphasized is the necessity for quick and continued action.

SURGICAL TREATMENT OF CERVICAL ADENITIS

To the Editor:—In the instance of cervical adenitis with abscess formation in a child, should the men in general practice use ethyl chloride locally and aseptically incise the abscess, or should the patient be taken to a hospital where a general anesthetic should be given? In other words, should such a patient be referred to the hospital, or should the attending physician render the service indicated? Kindly omit name.

M.D., Virginia.

ANSWER.—If the abscess is fairly superficial and the patient in fairly good condition, there is no reason why any physician doing such operations should not incise it under aseptic conditions in the home. The referring of such a patient to a hospital or to an experienced surgeon should depend on the surgical ability of the physician in charge, the accessibility to a hospital, the economic status, and the expressed desires of the parents. A local procaine anesthesia or ethyl chloride may be used satisfactorily for superficial abscesses. A deep abscess or an excitable patient is a reason for a general anesthetic, in the absence of contraindications.

It is advisable to call attention to the possibility of injury to the large blood vessels by any incision in the neck and to be prepared for the control of a possible hemorrhage with sterile instruments and gauze. As a usual thing, it is possible to avoid a hemorrhage by the use of the tip of a hemostat for opening an abscess, after the method of Hilton, following an incision through the skin and fascia.

DOSAGE AND USES OF SODIUM IODIDE

To the Editor:—What is the usual dosage of sodium iodide by vein? What is the maximum dosage that has been given without dangerous effects? In what concentration is the solution injected into the veins? Please omit name.

M.D., American Samoa.

ANSWER.—The usual dose of sodium iodide for intravenous injection is 1 Gm. dissolved in 10 cc. of water; the usual concentration, 10 per cent. Doses of 100 cc. in 10 per cent solution are generally well tolerated at intervals of from four to seven days. Such doses are best given after a preliminary test dose of 20 cc. to determine tolerance to the drug. Even this cannot be considered the maximal dosage. A patient with laryngeal syphilis (Howard, R. C.: Intravenous Injections of Sodium Iodide in Massive Doses in Obstinate Syphilis, *Am. J. Syph.* **2**:550 [July] 1928) received a total dose of 1,685.7 Gm. in the course of 125 injections given within 224 days. The initial dose was 2 Gm., which was increased by 0.3 Gm. up to a maximum dose of 22 Gm. In some cases of paresis, da Matta (*Brazil-med.*, Oct. 14, 1916) has injected as much as from 30 to 50 Gm. at a dose.

SPIROCHETES IN THE THROAT

To the Editor:—In what percentage of throats are spirochetes found not due to Vincent's angina? In other words, in what percentage of throats are spirochetes alone found? Is there any definite relation of spirochetes in the throat to syphilitic infection when there is no obvious syphilitic lesion? I am interested in the subject of spirochetes in apparently normal throats and in throats in which a pathologic condition is obvious. Please do not publish my name.

M.D., West Virginia.

ANSWER.—Aside from the Vincent spirochete there are at least three others found in the mouth and the anterior pharynx. Since the latter forms are part of the normal mouth flora, they will be given no further consideration. The occurrence of Vincent's spirochete is not limited to the throats of those suffering from the disease, as it is found in those free from this disease as well as in the lesions of other conditions. The estimates of the frequency of its occurrence vary from a little less than 50 per cent to 100. Apparently, syphilitic infection has little to do with its distribution; on the other hand, it is much more likely to be found in the mouths and throats of those whose mouth sanitation is bad or who have some chronic mouth or throat infection. It would seem that this organism and the fusiform bacillus with which it acts in symbiosis to produce either Vincent's angina or stomatitis are opportunists like the mouth and throat cocci; lesions are produced only when the local or general resistance is markedly lowered.

ANESTHESIA IN UREMIA

To the Editor:—What anesthesia is considered the best in cases of uremia? Does nitrous oxide, oxygen or ethylene gas increase the urea?

C. A. VARGAS, M.D., Bogota, Colombia.

ANSWER.—Undoubtedly either ethylene-oxygen or nitrous oxide-oxygen is the anesthetic of choice in uremia. These gases do not increase urea.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

COLORADO: Denver, Jan. 7, 1930. Sec., Dr. W. W. Williams, 224 State Capitol Bldg., Denver, Colo.

DELAWARE: Wilmington, Dec. 10-12, 1929. Sec., Dr. Harold Springer, 1013 Washington St., Wilmington, Del.

DISTRICT OF COLUMBIA: Washington, Jan. 13, 1930. Health Officer, Dr. W. C. Fowler, District Bldg., Washington, D. C.

KANSAS: Topeka, Dec. 10, 1919. Sec., Dr. Albert S. Ross, Sabetha, Kan.

KENTUCKY: Louisville, Dec. 3-5, 1929. Sec., Dr. A. T. McCormack, 532 West Main St., Louisville, Ky.

LOUISIANA: New Orleans, Dec. 12-14, 1929. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans, La.

MARYLAND: Baltimore, Dec. 10-13, 1929. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore, Md.

NATIONAL BOARD: Feb. 12-14, 1930. In all centers where there are five or more candidates. Dir., Mr. E. S. Elwood, 225 South Fifteenth St., Philadelphia, Pa.

NORTH DAKOTA: Grand Forks, Jan. 7-10, 1930. Sec., Dr. G. M. Williamson, Grand Forks, N. D.

OHIO: Columbus, Dec. 4-6, 1929. Sec., Dr. H. M. Platter, 85 East Gay St., Columbus, Ohio.

OREGON: Portland, Jan. 7-8, 1930. Sec., Dr. Joseph F. Wood, 510 Selling Bldg., Portland, Ore.

PENNSYLVANIA: Philadelphia, Jan. 7-11, 1930. Bedside examination last two days in various Philadelphia hospitals. Dir., Dr. D. C. Koch, Harrisburg, Pa.

UTAH: Salt Lake City, Dec. 17-18, 1929. Director, Mr. S. W. Golding, 412 State Capitol Bldg., Salt Lake City, Utah.

VIRGINIA: Richmond, Dec. 3, 1929. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke, Va.

WASHINGTON: Seattle, Jan. 9-10, 1930. Basic Science. Dir., Mr. Charles Maybury, Olympia, Wash.

WISCONSIN: Milwaukee, Dec. 14, 1929. Basic Science Sec., Prof. Robert N. Bauer, 3410 Wisconsin Ave., Milwaukee, Wis. Madison, Jan. 14-16, 1930. General Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse, Wis.

MEDICINE IN SERVICE*

RAY LYMAN WILBUR, M.D.
WASHINGTON, D. C.

Today, on this historic spot, and in this notable American institution, the University of Virginia, we dedicate buildings and men to human service. We do this in the name of medicine. Throughout the known history of man the care of the sick and the injured has been of particular interest to certain members of human society. At times we measure the quality of civilizations by the type of care given the sick, insane and aged and by the interest taken in children. If we seek back through the old records we find medicine veiled in ignorance and superstition. There have always been acute observers and men of curiosity who not only cared for the sick but endeavored to build up systems of thought that would explain disease and rationalize methods of cure. Whether we study the Egyptians, the Greeks or the Romans, or the history of the Jews as brought out in the Bible, we find those beginnings of medicine on which we have now been able to build our great modern structure. One cannot fail to admire the medical wisdom shown in Leviticus or to note the great advantage which came to the Jewish people through following certain health precepts which were made a part of their religion.

Partial understanding and faulty theories made the development of the physician in civilization a long and troublesome process. Outstanding in the gradual unfolding of medicine as a profession was the attitude taken from the day of Hippocrates that the man of medicine was in human service and that the good of his patient was always to be his object and his goal. Even in the tangled social conditions of a developing Europe, the physician attained a unique position, the friend of emperor and king, the surgeon of general and soldier and the minister to the lowly and the weak. There was a gradual maturing of the conception of a common ownership of medical knowledge by a trained profession and the need of each member of that profession contributing to the others whatever he had discovered by observation or experiment which would be of benefit to all. Instead of holding useful knowledge for himself alone, it was his duty as well as his pleasure to lay it at the disposal of mankind. There were those in the care of the sick who used secret formulas and whose methods were hidden in darkness. But the better members of the profession worked on a more altruistic basis. The physicians united in faculties for the training of medical students. Centers of education grew up around great teachers and clinics under the inspiration of a common desire to do a better job.

When medicine began to change from an art to a science and the experimental method began to lay the foundation stones of scientific medicine, these high ideals of the medical profession made all discoveries available to the human race. It was the ardent wish of every man of medicine to broadcast any new finding so that it could be promptly used in the alleviation of human suffering. Through the experimental method have come our present great advances. I need not but refer to Jenner, Pasteur, Lister, Koch, Ehrlich and those others of all tongues and nations who have laboriously extracted truth from a sure but reluctant nature.

There has been steady progress through understanding. Fact has been fitted into fact to build up a firm structure. The expert has been given his rightful place. The microscope and the test tube have vied with each other in disclosing new information, which has been set in order by the combined work of the laboratory and the bedside. So rapid has been the advance that the mind of the medical profession has been under constant stimulation and subject to persistent readjustments. There has been but little room for the dogmatist. In the past few decades there has been a freshness about medical thinking which has attracted many of the best minds of the youth in all countries. Each worker, student, teacher or practitioner has added his part to the organized information which is now in everyday use. The security given to medicine by Pasteur and those who have followed him has offered many new opportunities in both private and public health and has given a range in possible human service far beyond the dreams of a century ago.

Alongside of the marked increase in our knowledge of disease and of the care of the sick there has been a steady growth of many social institutions. Hospitals and clinics in all their variety have been spread into all parts of the earth. In them have been congregated the machinery of science together with trained brains. While often started in the name of sweet charity, many of the plans for the care of the sick have become accepted as governmental responsibilities vital to a wholesome society and as a protection to those who are well.

The profession of medicine now faces a great new responsibility forced on it by the rapid evolution of a new economic order. The tradition of the man of medicine has been to make his discoveries available to science and to every physician. Now he faces the necessity of working out a program which will make his discoveries actually available to all. We have the facts, we have the trained physicians and nurses, but we have not as yet been able to meet the ideal of seeing that each member of civilized society obtains that advantage which is possible to him if he can get his share from the great pool of scientific medicine. To make medicine fit in with the other social forces so that its distribution will be uniform is vital in this age of science and democracy. There has been a gradual encroachment on the realm formerly controlled by the beloved family physician. The financial responsibilities of the individual physician have markedly increased. The cost of his education runs into thousands. He must have expensive equipment and

* Read at the dedication exercises of the new Medical Building, University of Virginia, Oct. 22, 1929.

costly places in which to work. Nurses, laboratory workers and an array of helpers must save his time for the real task at hand. Those for whom he cares are rightfully entitled to surroundings conducive to recovery. For each addition to the comfort or the safety of the patients there is a price to pay which cannot wisely be extracted from energy or the pocket of the physician. Our people know, with the present widespread education and the ease with which the newspaper and the radio bring them information, that they are not getting full advantage of all the forces that are available in the field of medicine. They are seeking relief and reaching out for means and methods which will bring it to them regardless of place of residence or economic condition.

The medical profession faces a most difficult task. Physicians being strong individualists, dealing intimately with personalities and following the ideal of the best good of the patient, find it almost impossible to turn from their busy lives to economic things; and yet without economic organization the physician cannot prosper and all of our people cannot receive the benefits that they should from modern science and modern medicine. We must face this situation squarely just as we have so often as a profession readjusted our points of view with the discovery of new forces.

It is said that to fear is to be old. Certainly the profession of medicine is not old enough to fear. It may be old in tradition, but it has had to be young in its perceptions and has had the steady revivification of new truths from its great army of research workers. Our real difficulty, nevertheless, is that we carry with us much of the economic thinking of the saddle bag days of medicine. Readjustment is inevitable and the necessary shifts should be made under the leadership of the profession. As we have met the kaleidoscopic changes of a rapidly advancing science, so must we turn ourselves to meet the even more rapid advances in society based on the contributions of the laboratory and the factory. Studies are now being made in the hope that we may uncover the realities of the situation and base on them some recommendations which will help the profession of medicine in giving to every boy and girl, every man and woman, a dignified chance to obtain good medical care. It can be done if we can apply here those principles of organization which have built up the industrial life of our nation.

Let us turn for a moment to the institution which is adding today to the commonwealth of Virginia new opportunities for the training of the physician and of the nurse and for the treatment of the ill and the injured. This is an educational institution. There is no other part of it more valuable than that of medicine. Here will come those harsh questions that face mankind—the problems of birth, of sickness and of death. Through these walls will stream a succession of the young and the old, together with their families and friends, and here will work a body of scholars and students earnestly striving to restrain the progress of diseases and to maintain human beings in sound physical and mental health. Here will be played one of the most interesting games in all human society, with the stakes happiness and the lives of many individuals. Here, too, will be applied the very latest facts in medicine and in surgery. It will be an inspiring place to work and a source of inspiration to the university, to the state and all of the surrounding country. No matter what may be done here, it will be impossible to reach all of those who need care; and yet to give to all those in this country who need care just such an opportunity as is offered here should be our ideal. The number of teaching hospitals must necessarily be small, but those who have learned medicine in such hospitals should be accessible to all. We need, then, to think of medicine in these new terms; to give medicine its complete social significance, and to stimulate the profession of medicine to develop its plans so that every member of society may have his share in our great medical heritage.

New Jersey June Examination

Dr. Charles B. Kelley, secretary of the Board of Medical Examiners of the state of New Jersey, reports the oral and written examination held at Trenton, June 18-19, 1929. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Eighty-two candidates were examined, 81 of whom passed, including 19 osteopaths, and 1 failed. One hundred and nineteen physicians and six osteopaths were licensed by endorsement of their credentials. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
Yale University School of Medicine	(1927)	85.2
Georgetown University School of Medicine	(1928)	79.2, 81.9, 83.2, 83.2, 83.8, 84.6
George Washington University Medical School	(1928)	86.8
Howard University School of Medicine	(1928)	79.6
Loyola University School of Medicine	(1929)	87.3
University of Maryland School of Medicine	(1928)	82.6
Harvard University Medical School	(1928)	84.2
Tufts College Medical School	(1927)	85.3
University of Michigan Medical School	(1928)	87.1
St. Louis University School of Medicine	(1928)	76.6
Creighton University School of Medicine	(1928)	80.5
Columbia University College of Phys. and Surgs.	(1928)	87.3
Cornell University Medical College	(1928)	86.7
Hahnemann Med. College and Hospital of Philadelphia	(1928)	77.2, 80.2, 81.4, 82.4, 83.1, 83.5, 84.3, 84.6, 85.1, 85.1, 85.8, 86.8, 88.5, 94.7
Jefferson Medical College	(1928)	78.3, 80.1, 81.1, 84, 84.6, 85.7, 86.3, 86.9, 88.5, 91.5
Temple University School of Medicine	(1927) (1928)	82.4, 80.4, 82.1, 82.1, 87.7
University of Pennsylvania School of Medicine	(1928)	78.9 81.6, 84.9, 85.5, 88.5
Woman's Medical College of Pennsylvania	(1927)	85.3
Medical College of Virginia	(1928)	85.5
Marquette University School of Medicine	(1929)	87
McGill University Faculty of Medicine	(1925) 80, (1926)	84.6
University of Catania Faculty of Medicine	(1899)	76.1
University of Munich Faculty of Medicine	(1923)*	79.2
University of Naples Faculty of Medicine	(1921) 78.2, (1923)*	82.5
University of Palermo Faculty of Medicine	(1922)	78.3
Osteopaths	75.1, 75.3, 75.4, 75.6, 76.1, 77, 77.7, 77.7, 78.3, 78.9, 79.2, 80, 80.5, 81, 81.2, 82.2, 82.8, 82.9, 85.5	

FAILED		
College	Year Grad.	Per Cent
Hahnemann Medical College of Philadelphia	(1893)	34.2

ENDORSEMENT OF CREDENTIALS		
College	Year Grad.	Endorsement with
University of Arkansas School of Medicine	(1927)	Akansas
Yale University School of Med.	(1925) Georgia, (1926)	Ohio
Georgetown University School of Medicine	(1928)	New York
George Washington University Medical School	(1928)	New York
Howard University School of Medicine	(1927), (1928)	Dist. Colum.
University of Georgia Medical Department	(1924)	Georgia
Northwestern University Medical School	(1927)	Illinois
University of Illinois College of Medicine	(1928)	Illinois
State University of Iowa College of Medicine	(1889)	Illinois
Kentucky School of Medicine	(1904)	Kentucky
University of Louisville School of Medicine	(1924)	Kentucky
Johns Hopkins University School of Medicine	(1914) (1927)	Maryland
University of Maryland School of Medicine	(1926) (1906) (1925) (1927) (2)	Maryland New York
Harvard University Medical School	(1925) (1926)	N. B. M. Ex.
Tufts College Medical School	(1926) (1927) (1924)	Pennsylvania, (1927) N. B. M. Ex. Mass.
Michigan College of Medicine and Surgery	(1903)	Ohio
University of Michigan Medical College	(1918)	Michigan
Univ. of Minnesota Med. School	(1922) New York, (1925)	Mass.
Columbia Univ. College of Physicians and Surgeons	(1927) (1899) (1926) (1928)	N. B. M. Ex. New York
Cornell University Medical College	(1925) (1926) (1909) (1911) (1917) (1923) (1926) (2) (1927) (2)	N. B. M. Ex. New York
Fordham University School of Medicine	(1915)	New York
Long Island Coll. Hos.	(1898) (1909) (1912) (1927) (1928) (2)	New York
New York Homeopathic Med. College	(1906) (1913) (1928)	New York
Syracuse University College of Medicine	(1926)	N. B. M. Ex.
University and Bellevue Hospital and Med. College	(1927) (1907) (1925) (1927) (5)	N. B. M. Ex. New York
University of Buffalo School of Medicine	(1927)	New York
Cleveland Homeopathic Medical College	(1905)	New York
Eclectic Med. College of Cincinnati	(1928) (2) Ohio, (1927)	New York
Ohio State College of Homeopathic Medicine	1922)	New York
Western Reserve University School of Medicine	(1921)	Ohio
Hahnemann Med. Coll. of Philadelphia	(1905) (1923) (1925) (1927) Ohio, (1927) Rhode Island	Penna.
Jefferson Medical College	(1905) (1906) (1909) (1927) (1927) (1928) North Carolina, (1924) (1925) West Virginia, (1927) California, (1921) (1928) (2) New York	Penna.
Medico-Chirurgical College of Philadelphia	(1895) (1915)	Penna.
Temple University School of Medicine	(1914)	Penna.
University of Pennsylvania School of Medicine	(1927) (1902) (1904) (1912) (1913) Penna., (1927) (2) New York, (1920) Minnesota	N. B. M. Ex.
Western Pennsylvania Medical College	(1895)	Penna.
Women's Medical College of Pennsylvania	(1926)	NewYork
Meharry Medical College	(1925)	Tennessee
Vanderbilt University School of Medicine	(1915) (1922)	Alabama Tennessee
Baylor University College of Medicine	(1921)	New York
Southern Methodist Univerrity Medical Department	(1912)	Oklahoma

University of Vermont College of Medicine	(1897) (1927)	Vermont
Medical College of Virginia	(1927)	Virginia
University of Virginia Department of Medicine	(1925)	Virginia
Marquette University School of Medicine	(1917)	Wisconsin
McGill University Faculty of Medicine	(1926) (1927)	New York Massachusetts
University of Toronto Faculty of Medicine	(1922) (1922) (1924)	Penna. New York
Queen's University Faculty of Medicine	(1916)	New York
Royal University of Budapest Faculty of Medicine	(1920)	New York
Royal University of Naples Faculty of Medicine	(1922)	R. Island
University of Vienna Faculty of Medicine	(1928)*	New York
University of Goettingen Faculty of Medicine	(1914)	New York
Osteopaths	Penna., New York, (3)	Missouri

* Verification of graduation now in process.

Book Notices

RECENT ADVANCES IN SURGERY. By W. Heneage Ogilvie, M.A., M.D., M.Ch., Assistant Surgeon, Guy's Hospital. Second edition. Cloth. Price, $3.50 net. Pp. 495, with 115 illustrations. Philadelphia: P. Blakiston's Son & Company, 1929.

It is difficult to speak of recent advances in any but a static field of endeavor. The author is aware of this fact and says: "Surgery is essentially a method of treatment and it is therefore hard to say at what moment and by what steps it advances. A new method is experimental; by the time its value is established, it is not recent." The progress of the past five years in surgery consisted chiefly in retracing that of the five previous. The work, written in a clear, concise manner, is not an exhaustive treatment of the subjects under consideration but in a simple manner discusses the problems, in all their aspects, along which advance has been, is being or is likely to be made. The entire field of surgery is covered—some subjects more completely than others. There are excellent chapters on radiation and cancer. Neurosurgery, gallbladder disease and chest surgery are discussed in a thorough and attractive manner, providing a great deal of interesting information. The chapter on local anesthesia is quite complete, well and clearly written and illustrated, while spinal anesthesia is mentioned only to be condemned. There are briefer and more limited discussions on shock and hemorrhage, the heart and blood vessels, the stomach, peritoneum and large intestine, the spleen, the urogenital system and venereal disease, the thyroid, plastic surgery and the surgery of bones, joints and muscles. A fairly large number of drawings and photographs are well distributed through the book, and good bibliographies are appended to each chapter. The author has made an earnest attempt, by digestion of a great deal of literature, to keep the reader abreast of the time and present-day surgical opinion.

THE CHALLENGE OF CHRONIC DISEASES. By Ernst P. Boas, M.D., Attending Physician, Montefiore Hospital for Chronic Diseases, and Nicholas Michelson, M.D., Adjunct Physician, Montefiore Hospital for Chronic Diseases. Cloth. Price, $2.50. Pp. 197, with 3 illustrations. New York: Macmillan Company, 1929.

"Chronic patients," says Dr. Boas, "form the bulk of the physician's private practice. Because of the complexity and chronicity of their illnesses, they are among the most difficult whom he is called on to treat." Yet, Dr. Boas points out, "chronic" cases have been too often regarded as "uninteresting" and been confused with the "incurable" on the one side and the "convalescent" on the other. In his distinctive work as head of the Montefiore Hospital for Chronic Diseases in New York, which he recently left to resume private practice, Dr. Boas divided chronic diseases into the A, B and C types, A being the patients that need intensive medical and nursing care, B those that require little more than skilled nursing care, and C those needing custodial care only. In the experience of Dr. Boas, about two thirds of the cases fall into the A group. While the classification seems almost too obvious, it nevertheless has served to point out to physicians and hospital administrators the fact that the typical chronic patient needs a high degree of skilled medical service and, what is still more important, can generally be benefited even though not "cured" by such attention. Poverty is likely to be associated with chronicity among wage earners, and this and other social factors must be considered by the physician. The economic benefits of removal or reduction of disability are often to be weighed more fully than the cure or control of pathologic processes as such. Dr. Boas and Dr. Michelson have put the results of years of study and practical experience into a small volume which will be helpful to every physician who realizes the part which chronic illness plays among his clients, and especially to those who are on the medical or administrative staffs of hospitals and clinics. There is some, though unfortunately brief, discussion of the types of chronic diseases, more extended consideration of the construction, organization and management of hospitals for chronic conditions, and a moving plea for the abolition of the American "almshouse," the inmates of which generally belong either in an institution for chronic diseases or can be more economically and satisfactorily boarded out or cared for in their own homes.

TRAITÉ D'ENDOCRINOLOGIE: Glandes surrénales et organes chromaffines. Par M. Lucien, professeur à la Faculté de médecine de l'Université de Nancy, J. Parisot, professeur à la Faculté de médecine de Nancy, et G. Richard, médecin consultant à Royat. Paper. Price, 100 francs. Pp. 710, with 104 illustrations. Paris: Gaston Doin & Cie, 1929.

This is the third volume of the ambitious compilation on the endocrine glands undertaken by these authors. More than a hundred pages is devoted to the histology of the suprarenals; another hundred pages deals with the normal physiology of these glands. The third section (more than a hundred pages) deals with the rôle of the suprarenal hormones in health in the processes of nutrition, immunity, circulation, and "tonus of the vegetative nervous system." The remainder of the volume is taken up with the pathology, symptoms and therapy of disorders of the suprarenal glands. A useful bibliography appears at the end of each chapter. There is even a chapter (seventeen pages) on medicolegal aspects of the suprarenal glands. The book is inclusive rather than critical. The multiplicity of treatments of actual or conjectured disorders of the suprarenal glands are reported with scant analysis or critical evaluation. On the other hand, the reader is pleased to note that the authors seldom press untenable or insecure claims with undue dogmatism. The informed physician can peruse the volume with profit.

TULAREMIA: HISTORY, PATHOLOGY, DIAGNOSIS AND TREATMENT. By Walter M. Simpson, M.S., M.D., F.A.C.P., Director of the Diagnostic Laboratories, Miami Valley Hospital, Dayton, Ohio. Foreword by Edward Francis, Surgeon, United States Public Health Service. Cloth. Price, $5 net. Pp. 162, with 55 illustrations. New York: Paul B. Hoeber, Inc., 1929.

Prefaced by handsome portraits of Drs. Francis and McCoy, and with a foreword by Francis, who put tularemia on the medical map, this monograph makes available to the reader most of what is now known concerning this disease. Its orderly arrangement, its thoroughly scientific character, the beauty of the illustrations and of the printing, make the book a product of American medical pride. In the brief period that has elapsed since this condition first came on the medical scene, hundreds of references have appeared in medical literature. These too are thoroughly covered in Dr. Simpson's book.

DR. COLWELL'S DAILY LOG FOR PHYSICIANS, 1929. Leatherette. Price, $6. Champaign, Ill.: Colwell Publishing Company, 1929.

Bookkeeping for doctors and dentists is a special problem. Here is a loose leaf record book for listing on each day hours of appointments, names of patients, services rendered, whether charged or cash payment, and money on account. Extra pages provide suitable columns for summaries of monthly business, expenses, narcotics prescribed, obstetrics, and memorandums. The general practitioner who has to keep his own books while attending to all the other minutiae that occupy him will find the book convenient.

THE MOBILIZATION OF ANKYLOSED JOINTS BY ARTHROPLASTY. By W. Russell MacAusland, M.D., Surgeon-in-Chief, Orthopedic Department, Carney Hospital, and Andrew R. MacAusland, M.D., Orthopedic Surgeon, Carney Hospital, Boston, Mass. Cloth. Price, $4 net. Pp. 252, with 154 illustrations. Philadelphia: Lea & Febiger, 1929.

The authors say that an arthroplasty is the creation of an artificial joint for the purpose of restoring motion to a joint which is either completely ankylosed or which has such a limited degree of motion that the limb is not serviceable. It is a highly technical operative procedure which aims not only to restore motion to a joint but also to preserve its stability. With these two objects in view, the component parts of the joint are reconstructed and material of some kind is interposed between the

articular ends to prevent *reankylosis*. The authors state that their object in presenting this book is to emphasize the fact that arthroplasty has become a standardized form of treatment for the mobilization of ankylosed joints. The technic is exacting and can be carried out only by a carefully trained surgeon. Scrupulous judgment must be exercised in the selection of cases for arthroplasty. The authors have had enormous experience in the work and are among the prominent surgeons in this field. References are made to other surgeons who have been working along similar lines. The various types of ankyloses are discussed and the etiology and pathology are given. The functional position of the various joints is discussed. The difference between arthroplasty and excision is emphasized. A bibliography is appended to each chapter. Arthroplasty is applied to the elbow, knee, hip, jaw, shoulder, wrist, fingers and joints of the foot. Each is discussed separately. The indications and contraindications are given. The illustrations are, on the whole, satisfactory. It is a book that should be read by every one who proposes to perform this type of operation.

THE TREATMENT OF DIABETES MELLITUS WITH HIGHER CARBOHYDRATE DIETS. A Textbook for Physicians and Patients. By William David Sansum, M.S., M.D., F.A.C.P., Percival Allen Gray, Ph.D., M.D., and Ruth Bowden, B.S. Leatherette. Price, $2.50. Pp. 309. New York: Harper & Brothers, 1929.

When Sansum published his work on higher carbohydrate diets in the treatment of diabetes, most students of the disease looked askance. The one striking feature of Sansum's work was that, despite the marked increase in carbohydrates, there was no corresponding increase in insulin. The present volume is an interesting review of Sansum's stand, which at present must be considered somewhat controversial. This book gives an excellent presentation of the point of view of the adherents to the higher diet and must be given thoughtful consideration by all students of the disease whether or not they agree with this point of view. The book also is an excellent manual of diabetes and has complete diet lists, tables, and the usual material of such a manual.

KLINISCHE RÖNTGENDIAGNOSTIK DER ERKRANKUNGEN DER BRUSTORGANE. Von Dr. H. Chaoul, a. o. Professor an der Universität Berlin. Paper. Price, 54 marks. Pp. 373, with 480 illustrations. Berlin: Julius Springer, 1929.

This book, amply illustrated with excellent halftones, constitutes a real mine of information indispensable in the interpretation of roentgenograms in disorders of the thorax. Originally written by Chaoul and Stierlin as a section of Sauerbruch's monumental work on surgery of the chest, it has been amplified by Chaoul and brought down to date by the addition of more than a hundred pages of new material, including a section on cardiac disorders not included in the original publication. Most works on roentgenology of the thorax lack the authority inherent in similar works on the abdomen because of the infrequency of surgical or postmortem check on the roentgenographic observations as contrasted with the frequent operative confirmation of abdominal roentgenologic studies. In the present volume this fault is corrected to an unusual degree because of the large operative material in the clinic on thoracic surgery under Professor Sauerbruch. Even for those unfamiliar with German, the wealth of illustrations makes this work worthy of a place on the desk of every diagnostician.

DISEASES OF THE THYROID GLAND. By Arthur E. Hertzler, M.D., Surgeon to the Halstead Hospital. With a chapter on Hospital Management of Goiter Patients by Victor E. Chesky, M.D., Associate Surgeon to Halstead Hospital. Second edition. Cloth. Price, $7.50. Pp. 286, with 159 illustrations. St. Louis: C. V. Mosby Company, 1929.

In the last five years, notable advances have been made in the understanding and treatment of thyroid diseases. Fundamental differences of opinion that separated internist from surgeon have been ironed out, and these two divisions are in almost uniform accord on the subject of treatment. The present work represents the investigation of a well known surgeon over a thirty year period. The first half deals with etiology, morphology and pathology. The remaining sections deal with symptomatology, diagnosis, prognosis and treatment, goiters in unusual places, hospital management, and the technic of operation. Whatever criticisms may be leveled, let it be said that the chapters on pathology are well done. The scheme of classification is simple, the presentation is clear, and unnecessary bulk is avoided. The diagnosis of the thyrotoxic state is less well handled, particularly early diagnosis. The discussion of the basal metabolic rate is not sufficiently complete. Chapters dealing with preoperative and postoperative treatment are well done. The section on technic, as is usually the case, more than any other section bears the stamp and personality of the individual and will be subject to the criticism of other surgeons, not on fundamentals so much as on details. Blunt dissection is by no means necessarily "the work and means of a poor operator." Planes of cleavage will usually stand out brilliantly with skilled blunt dissection. To advise or to suggest a two-step operation for beginners in bad risks is not good teaching. Beginners have no place in any kind of thyroid surgery. The expert in thyroid surgery need but seldom resort to a two-step procedure. In severe thyrotoxicosis, the objective of the surgeon is a maximum thyroidectomy. Nothing short of this is compatible with cure. In such cases, one will rarely be able to suture over the cut surfaces of thyroid remnants. To have an operative mortality today as high as it was twenty years ago, because of the more routine removal of the second lobe, is entirely out of line with the recorded statistics of individual surgeons and groups handling large numbers of thyroid cases.

DEGENERATION AND REGENERATION OF THE NERVOUS SYSTEM. By S. Ramón y Cajal, M.D., F.R.S., Director of the Instituto Cajal, Madrid. Volume I and Volume II. Translated and edited by Raoul M. Day, Ph.D., D.ès Sc. Cloth. Price, $18 per set. Pp. 769, with 317 illustrations. New York: Oxford University Press, 1928.

As a tribute to the author, Argentine physicians defrayed the cost of the first printing of this work, an edition in Spanish which appeared in 1913 soon after Cajal's investigations won him the Nobel prize. He said at that time, "Among the homages received none did me more honor, because of its delicate and thoughtful nature, then the tribute to the humble man of science from his medical compatriots of the Argentine Republic." This modesty, so characteristic of truly great investigators, is reflected in the omission of reference to his own publications in the extensive index of authors. Although several pages of fine print are required to inform the reader where he can find reference to publications by others, Cajal's name does not occur, although about a hundred footnotes all through both volumes refer to his own publications. The important part he had in finally bringing about recognition that regeneration of nerves invariably takes place from cells where axons arise is well known. This was the outcome of a controversy lasting many years in which numerous physiologists and anatomists were arrayed in opposition. Among these notables were Van Gehuchten, His, Bethe, Huber, Stewart and Ballance, Ranvier and Stroebe. There is no doubt that the ingenious experiments of Cajal and the technical methods that he devised were of supreme importance in terminating contention over the main particular of the conflict, continuous or discontinuous regeneration, monogenism or polygenism. The history of this struggle is all related in a delightful fashion, how the monogenists ultimately won through one investigation after another with use of the new methods of study. What was brought forward by each side is impartially reviewed by Cajal. It is an extensive monograph in which the author has revised all the investigations previously reported. It is also original in large measure. The first volume deals with traumatic degeneration and regeneration of the nerves; in the second, degeneration and regeneration of the nerve centers are considered; in each there are sixteen chapters. The plain black and white illustrations with rather full legends speak volumes. They are the kind which teachers have learned are necessary to insure imparting of knowledge. For this English translation many chapters have additional notes at the end dealing with recent publications. To surgeons, neurologists, physiologists and pathologists especially, but also to physicians in general this work is a boon, since Cajal's researches during several decades, somewhat inaccessible because most of them appeared in Spanish, are here gathered together. Few investigators outside Spain have known of the book, and the World War delayed its translation. The statement by Cajal in the preface, "The present English translation has saved my work from an irremediable loss," is indeed true. The high standards of workmanship of the Oxford Press are well represented in this publication.

Medicolegal

Violation of Medical Practice Act: Procedure and Evidence

(Williams v. State (Neb.), 224 N. W. 286)

Mrs. Morris was about to be confined. She did not desire a man physician but wished, if she had to have anybody, to have the defendant, Mrs. Williams. Mrs. Williams was not licensed to practice medicine but was the wife of a licensed physician. According to the evidence, Mr. Morris telephoned to her husband, Dr. Williams, telling him that a physician was needed. Dr. Williams asked if he should bring a nurse with him. Morris replied that he would like to have Mrs. Williams. As Dr. Williams was about to go out on another call, he arranged for Morris to call for Mrs. Williams and take her to the patient. Dr. Williams testified that he expected at that time to reach the patient before she was delivered, but that a storm delayed him and the child was born before he arrived. Mrs. Williams apparently rendered such service as she could. Thereafter she was prosecuted and convicted of practicing medicine, obstetrics and surgery without a license. Special counsel assisted in the prosecution, appointed by the court but paid by private citizens. The defendant produced Dr. Williams, her husband, as a witness on her behalf, but through him the prosecution brought out on cross-examination that the defendant had been present at other obstetric cases and performed similar services in them. The theory of the prosecution seems to have been that the attendance of Mrs. Williams on Mrs. Morris was pursuant to a scheme or device between her and her husband to enable her to practice obstetrics without complying with the law. From her conviction, Mrs. Williams appealed to the supreme court of Nebraska.

Mrs. Williams, in support of her appeal, claimed that evidence of acts other than that with which she was specifically charged was incompetent and inadmissible. With this contention, however, the court did not agree. Evidence of other acts occurring so near together in point of time and so nearly similar in character as to lead to a logical inference that they were committed in pursuance of some deliberate purpose or scheme planned beforehand is admissible even though those other acts may constitute another criminal offense. Such evidence, however, said the court, to be admissible must be properly adduced, and that was not done in this case. The husband of the defendant was produced by her as the witness on her behalf. In direct examination he was not examined and did not testify as to any transaction other than the one on which the prosecution was based. But on cross-examination he was required to testify, over the objection of the defendant, concerning the facts and circumstances involving similar but entirely independent transactions, in no manner brought out or referred to in his direct examination. This was contrary to the well known rule that the right to cross-examine a witness is confined to matters or transactions brought out in direct examination. If adverse parties desire to examine a witness on other matters they must call him for that purpose and make him their own witness. In this case the violation of the rule prejudiced the defendant, as the witness was her husband and was thus required to become a witness against his wife, contrary to the statutes governing such testimony.

"It may be," said the court, "that the prosecution was inspired somewhat by business competitors of Dr. Williams." A physician who testified for the prosecution admitted that he intended to help pay the attorneys who were prosecuting the case. The appointment of counsel who are employed by or are to be paid by private citizens, to assist in the prosecution of criminal cases, is not looked on with favor. But the defendant did not challenge the right of counsel to assist in the prosecution of the case nor ask any ruling concerning it even after it developed during the trial that the compensation of counsel assisting in the prosecution was to be paid by private citizens. It was too late for the defendant to complain for the first time in the course of her appeal.

The evidence showed that the defendant went to the home of the patient at the request of Dr. Williams, her husband, after having been advised by him that he would follow in fifteen to twenty minutes, that a storm came up which delayed him, and that in the meantime the birth of the baby became imminent. This made the case, as far as the defendant was concerned, an emergency case in which she was justified in rendering such assistance as she may have been qualified to give. In so doing she was within the purview of the exception of the statute, which provides that it shall not apply to "nurses in their legitimate occupations." The judgment of conviction against her was therefore reversed and the case dismissed.

Testimony as to Complaints of Pain.—The plaintiff sued the defendant on account of injuries received in an automobile accident. From a judgment in her favor for nominal damages only, she appealed to the supreme court of Alabama. She took exception to the refusal of the trial court to permit the physician who attended her at the time of the accident, and who appeared as a witness in her behalf, to say whether she had or had not from time to time since the accident complained of pains in her shoulders and back such as she complained of when he first saw her after she was injured. This refusal, said the supreme court, was error. In personal injury cases where there is evidence of injury resulting in continued pain and suffering, said the court, expressions of pain of like kind are admissible in evidence. Such complaints are not limited to the time of the accident nor to any limited time thereafter, but they must relate to pains that are present when the complaint is made and not be mere narratives of past experiences. They are not admissible to prove the circumstances or cause of the injury. Any person who has heard them when they were uttered may testify to them. This rule, however, must be distinguished from the rule governing the examination of a physician as an expert witness. In giving his professional opinion as to the extent and nature of the injury, an expert witness may state the basis on which he has formed the opinion, including the symptoms stated by his patient and the fact of a hurt or injury and its character. These may involve statements to the physician concerning the nature of past events and supposed causes, but they must not go into the question of responsibility for the injury. They are limited to purposes of diagnosis and come in evidence along with and as part of the basis for his opinion, admitted out of necessity in allowing a proper field for medical science in legal administrations. The probative force of the opinion stated by the witness depends on the verity of the basis on which it is formed, as found by the jury. The judgment was reversed and the cause remanded.—*Lowery v. Jones (Ala.), 121 So. 704.*

Workmen's Compensation: When Heat Stroke Resulting from Weather Conditions is Compensable.—During a period of unusually warm and humid weather, a workman engaged in removing red hot steel bars from a furnace died from heat stroke or heat prostration within a few hours after the close of his day's labor. Held, that the widow was properly refused compensation, because the evidence did not show that death resulted from some unusual or extraordinary conditions of labor as distinguished from climatic conditions alone. Unless the weather creates an unusual and extraordinary condition in the workman's employment, an injury from heat stroke or prostration is not compensable. Climatic fluctuations of temperature and humidity are normal conditions, to be encountered and borne by workmen in the course of their employment.—*Miskowiak v. Bethlehem Steel Co. (Md.), 145 Atl. 199.*

Society Proceedings

COMING MEETINGS

American Academy of Physical Therapy, Philadelphia, December 5-6. Dr. Thomas L. Smyth, 111 North Eighth Street, Allentown, Pa., Sec'y.

American Society for the Study of Disorders of Speech, New York, December 30-January 1. Dr. Sara M. Stinchfield, Mt. Holyoke College, South Hadley, Mass., Secretary.

Radiological Society of North America, Toronto, December 2-6. Dr. I. S. Trostler, 25 East Washington Street, Chicago, Acting Secretary.

Society of American Bacteriologists, Ames, Iowa, December 30-January 1. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Southern Surgical Association, Atlanta, Ga., December 10-12. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.

Western Surgical Association, Del Monte, Calif., December 12-14. Dr. Frank R. Teachenor, 306 E. Twelfth St., Kansas City, Mo., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Anatomy, Philadelphia

44: 141-329 (Sept. 15) 1929

Efferent Vessels of Renal Glomeruli of Mammals as Mechanism for Control of Glomerular Activity and Pressure. R. D. Bensley, Chicago.—p. 141.
Reaction of Chick Embryo and Membranes to Trypan Blue. J. S. Latta and L. F. Busby, Omaha.—p. 171.
Cytologic Study of Mammary Gland: Golgi Apparatus, Trophospongium and Other Cytoplasmic Canaliculi, Mitochondria. H. L. Weatherford, Boston.—p. 199.
Development of Pharynx and Pharyngeal Derivatives in White Rat (Mus Norvegicus Albinus). W. M. Rogers, Ithaca, N. Y.—p. 283.

American J. Dis. of Children, Chicago

38: 905-1124 (Nov.) 1929

*Control of Scarlet Fever. G. F. Dick and G. H. Dick, Chicago.—p. 905.
Carbohydrate Metabolism of Premature Infants: I. Blood Sugar During Fasting. S. Van Creveld, Amsterdam, Holland.—p. 912.
*Preparation of Sodium Bicarbonate for Intraperitoneal Use. A. T. Shohl, Cleveland.—p. 927.
*Effect of Tonsillectomy and Adenoidectomy on Diphtheria Immunity. B. Schick and A. Topper, New York.—p. 929.
*Relation Between Colic and Eczema in Early Infancy. P. J. White, St. Louis.—p. 935.
*Preparation of Dextrose for Intraperitoneal Injection. A. T. Shohl and F. Beal, Cleveland.—p. 943.
Continuous Temperature Records of Premature Infants. R. M. Tyson and E. F. Burt, Philadelphia.—p. 944.
*Scarlet Fever: VII. Blanching with Placental Serum. J. A. Toomey and M. H. August, Cleveland.—p. 953.
Anomalies of Urinary Tract in Children. J. A. Bigler, Chicago.—p. 960.
*Spontaneous Bacilluria and Pyelitis in Rabbit. H. F. Helmholz, Rochester, Minn.—p. 968.
Interpretation of Roentgenograms of Chest in Children Based on Observations at Necropsy: I. Hilar Shadows and Linear Markings. J. A. Bigler, Chicago.—p. 978.
Progeria. V. T. Curtin, Philadelphia, and H. F. Kotzen, Reading, Pa.—p. 993.
Ureteral Neuromuscular Dystrophy in Relation to Infections of Kidneys of Children. D. N. Eisendrath, M. Jampolis and E. Davis, Chicago.—p. 1006.
*Purpura Hemorrhagica Gangrenosa. L. G. Beinhauer, Pittsburgh.—p. 1013.
Urticaria Pigmentosa in Children. H. H. Ray and K. Kiyasu, San Francisco.—p. 1020.
Multiple Disseminated Lupus Vulgaris. V. C. Garner, Philadelphia.—p. 1028.
*Agranulocytosis. K. Tokue and M. Yasumoto, Sendai, Japan.—p. 1037.
*Typhoid Fever in Infant Less Than One Month of Age. A. A. Weech and K. T. Chen, Peiping, China.—p. 1044.
Prognosis of Acute Nephritis in Childhood. J. D. Lyttle and L. Rosenberg, New York.—p. 1052.
Walter Harris, 1647-1742. J. Ruhräh, Baltimore.—p. 1064.

Control of Scarlet Fever.—The Dicks assert that scarlet fever antitoxin may be employed therapeutically with advantage in all cases of scarlet fever as soon as the appearance of the rash suggests the diagnosis. Given early, in adequate dosage, scarlet fever antitoxin gives brilliant results. The patient sometimes recovers so promptly that the attending physician wonders whether or not he could have been mistaken in the diagnosis of scarlet fever. The longer the patient goes without antitoxin, the less he benefits from it when it is given. It should not be withheld until it becomes apparent that the attack is a severe one but should be given in time to prevent the development of a severe attack. Patients in hospitals do not furnish the most favorable material for determining the therapeutic value of scarlet fever antitoxin, because administration of the serum is delayed until the diagnosis of scarlet fever has been confirmed, the health department notified and arrangements made for transferring the patient to a hospital. But, even with the delay involved in such cases, it has been shown that scarlet fever antitoxin reduces the incidence and severity of complications. Results in an antitoxin series, which included the more severe cases, compared with the results in a control series consisting of the cases which, on admission to the hospitals, appeared to be less severe, show that mastoiditis occurred three times as frequently in the control series as in the antitoxin series; that postscarlatinal nephritis appeared four times as frequently in the control series as in the antitoxin series, and that, in spite of the milder appearance of the disease at the onset, the death rate in the control series was twice that in the antitoxin series.

Preparation of Sodium Bicarbonate for Intraperitoneal Use.—Shohl describes a method whereby the acidity of a solution of sodium bicarbonate may be first adjusted with carbon dioxide to the proper acidity and, subsequently, autoclaved without loss of carbon dioxide.

Effect of Tonsillectomy and Adenoidectomy on Diphtheria Immunity.—Tonsillectomy has been advocated not only to relieve symptoms referable to diseased tonsils themselves but also as a means of protection against subsequent infections. Schick and Topper have made the Schick test on every child who came to the hospital for tonsillectomy. They found a fairly large number of children who showed a positive reaction to the diphtheria test before tonsillectomy. Six months after tonsillectomy, 100 children were retested. In eighteen children the reactions still remained positive, and in eighty-two the results were negative; in eleven of the sixty-one younger children (6 years of age or less) the reaction remained positive, while in fifty it became negative; in seven of the thirty-nine older children (more than 6 years of age) the reaction remained positive, while in thirty-two it became negative. The authors do not advocate indiscriminate tonsillectomy. They are still emphatically in favor of immunization by toxin-antitoxin. However, there are two practical applications to be considered: (1) the recommendation of tonsillectomy in place of immunization with toxin-antitoxin for children with diseased tonsils who are sensitive to horse serum; (2) the recommendation of testing children who have been tonsillectomized six months or more previously before immunizing with toxin-antitoxin.

Relation Between Colic and Eczema in Early Infancy.—White asserts that young infants with "true colic," or vagogenic gastro-enterospasm, in whom eczema develops later, are almost three times as numerous as those suffering from either condition alone. An allergic family history is about equally frequent (30 or 40 per cent) for infants with eczema, with colic or with both. The usual sequence is: (*a*) colic (*b*) diarrhea, (*c*) vomiting—all at from 2 to 4 weeks of age—and (*d*) eczema, at about 10 weeks of age. Atropine is effective almost three times as frequently in infants with colic alone as in infants with both colic and eczema. The feeding of thick cereal may succeed in cases of colic in which atropine does not produce improvement. There is no evidence that the feeding of thick cereal predisposes to eczema. Possibly because of hyperacidity associated with hypermotility, infants with gastro-enterospasm tolerate sweet milk better than lactic acid milk. White feels that the exudative diathesis, vagotonia and vagogenic gastro-enterospasm, with or without eczema, probably have a common allergic basis.

Preparation of Dextrose for Intraperitoneal Injection.—Shohl and Beal describe a method for the preparation of a dextrose solution which does not cause any untoward effects. Five grams of chemically pure, finely ground dextrose is weighed and placed in a test tube approximately 4 by ¾ inches (100 by 15 mm.) and the test tube is loosely stoppered with a cotton plug. This is inverted and placed in a wide-mouthed bottle containing from 25 to 50 Gm. of granular anhydrous calcium chloride. The bottle is fitted with a cork and autoclaved at 15 pounds (6.8 Kg.) for twenty minutes. This preparation will keep for at least several months. For use, the solution is made with freshly distilled water. It is taken directly from the still and boiled five minutes (but not redistilled). One hundred cubic centimeters is poured on the sterile dextrose which has been placed in the graduated flask to be used for the injection, and a 5 per cent solution is thus made. It is given intraperitoneally with the usual precaution, at body temperature.

Blanching with Placental Serum in Scarlet Fever.—Toomey and August have made a comparative study of the intradermal reactions to placental serum and the corresponding reactions to scarlet fever antitoxin, maternal serum and convalescent scarlet fever serum. Of 227 placental serums tested, 181 caused definite blanching of the rash of scarlet fever. The blanching power of placental serum was not affected by ether extraction. Filtration did not remove the blanching power of placental serum. Certain placental serums blanched as well as convalescent scarlet fever serums. Placental serum was sufficiently antitoxic to neutralize Dick toxin in vitro so that when a freshly prepared mixture of equal parts of placental serum and scarlet fever toxin (Dick test material) was injected into a susceptible person (i. e., one with a positive reaction to the Dick test), a negative reaction to the Dick test was obtained. Often convalescent serum and usually scarlet fever antitoxin were not as potent in this regard. Maternal serum had the same neutralizing property, and occasionally, although the mother gave a positive reaction to the Dick test, both her serum and her placental serum had the ability to neutralize scarlet fever toxin. Three bovine placental serums that were tested also blanched the rash of scarlet fever.

Spontaneous Bacilluria and Pyelitis in Rabbit.—As a result of his studies, Helmholz feels that the conclusion seems warranted that infections of the urinary tract in infants take place by the ascending route.

Purpura Hemorrhagica Gangrenosa.—Beinhauer's patient was aged 28 months. The case was of the acute infectious type due to the streptococcus. The postmortem examination revealed streptococcic septicemia; septic thrombosis of the cutaneous blood vessels; septic thrombosis of the dorsalis pedis and tarsal arteries; terminal pneumonia and fibrinopurulent pleurisy; dry gangrene of the left foot, right hand, left elbow, thighs and buttocks; cloudy swelling of the heart, liver and kidneys; hyperplasia of the lymph nodes and Peyer's patches, and collapse of the left lung. The boy had been ill about four weeks.

Agranulocytosis.—Tokue and Yasumoto report what they believe to be the first case of agranulocytosis reported in Japan, and, as far as they know, their patient is the youngest one who ever had the disease (4 years). The clinical picture resembled that of sepsis. The first suspicion that the condition was agranulocytosis was aroused by the routine blood cell count made by the method devised by Sato and Shoji, because the white cells in the counting chamber showed no blue-stained leukocytes (myeloid leukocytes) but only red-stained cells (lymphocytes). The severe condition of the pharynx was lacking, but other symptoms corresponded to those of agranulocytosis.

Typhoid in Infant Less than One Month of Age.—The diagnosis in the case reported by Weech and Chen was established by blood cultures which were positive for *B. typhosus* on two occasions. The case was characterized by an extremely mild clinical course, failure to gain in weight being the most conspicuous manifestation. The additional features were fever of only twenty-four hours' duration, slight splenic tumor, an atypical eruption, leukocytosis with a relative increase of lymphocytes, and a persistently negative Widal reaction.

American J. Public Health, New York

19: 1187-1285 (Nov.) 1929

Public Health Control. G. W. Fuller, New York.—p. 1187.
Sewage Disposal Problem of Minneapolis and St. Paul. J. A. Childs, St. Paul.—p. 1196.
*Problem of Sweets for Children. H. C. Sherman, C.-E. A. Winslow, E. L. Fisk, T. P. B. Jones and D. B. Jones.—p. 1205.
Need for Better Occupation Returns on Death Certificates. T. F. Murphy, Washington, D. C.—p. 1210.
Health of Anabolic Nutrition. F. L. Burnett, Boston.—p. 1215.
Essential Features in Design of Sanitary Drinking Fountains. C. A. Holmquist, A. E. Hansen, W. C. Groeniger, F. R. King and H. E. Babbitt.—p. 1223.
Research in Student Health. R. W. Bradshaw, Oberlin, Ohio.—p. 1229.

Problem of Sweets for Children.—Sherman et al. state that the proper place of sugar in the food supplies and eating habits of children is not in such concentrated forms as candy, nor in the indiscriminate and excessive sweetening of all kinds of foods, but rather as a preservative and flavor to facilitate the introduction into the child's dietary of larger amounts of the fruit and the milk, the importance of which to child health has been increasingly emphasized. A moderate amount of jam may be good for children—its sweetness may appeal to their palates and its fruit content will almost certainly be good for their health. A liberal amount of ice cream may be good—they may like it because of its sweetness and they will almost certainly be benefited by the extra milk and cream which they thus get. The practical lesson to be learned from the newer knowledge of nutrition is the great importance to health (at all ages and especially in childhood) of giving a more prominent place, in our eating habits and in our food budgets, to the protective foods, i. e., to milk, fruit and some of the vegetables; and that a more tolerant attitude toward sweets for children is not justified except so far as the use of sugar and other sweets may be practically helpful in preserving the protective foods or facilitating their attractive preparation so that children may be induced to live more largely on them.

American J. Syphilis, St. Louis

13: 489-650 (Oct.) 1929

Problem of Syphilis from Biologic and Clinical Point of View. W. E. Coutts, Santiago, Chile.—p. 489.
Syphilis: Prevention of Complications. H. H. Hazen, Washington, D. C.—p. 510.
Syphilis in Elderly Persons. G. M. MacKee, New York.—p. 514.
Congenital Syphilis of Stomach. J. R. Verbrycke, Jr., Washington, D. C.—p. 524.
Congenital Syphilis of Pancreas: Seven Cases. W. C. Menninger, Topeka, Kan.—p. 527.
*Arsphenamine Dermatitis with Gangrene. H. M. Robinson, Baltimore. —p. 536.
Wassermann Test: XXII. Provocative Wassermann Reaction. D. L. Belding, Boston.—p. 541.
Kahn Reaction with Spinal Fluid. R. L. Kahn and E. McDermott, Ann Arbor, Mich.—p. 557.
*Clinical Value of Kahn Test with Spinal Fluids. K. M. Davenport, Ann Arbor, Mich.—p. 570.
Clinical Value of Presumptive Kahn Test with Spinal Fluids. K. M. Davenport, Ann Arbor, Mich.—p. 575.
*Kline Slide Precipitation Test for Syphilis. T. H. Miller, Philadelphia. —p. 583.
Wassermann Reaction in Joint Fluids. D. H. Kling, Los Angeles. —p. 596.

Arsphenamine Dermatitis with Gangrene.—A fatal case of arsphenamine dermatitis is reported by Robinson. It was the result of neoarsphenamine poisoning and could probably have been avoided if the physician had stopped treatment with the onset of itching. When Robinson first saw the patient the entire skin was covered with brownish pigmentations and profuse scaliness, with numerous discrete and confluent pustules, fissures, crusts and ulcers which varied in size. The pustular exudation was profuse. All the fingers and two thirds of the left hand were black and seemed dried up and lifeless. No pulse was felt in this wrist. Numerous ulcerated areas were present on this forearm. The arsphenamine treatment was started early in December. The patient was hospitalized February 13 and died February 22.

Clinical Value of Kahn Test with Spinal Fluids.—A study was made by Davenport of the clinical value of the presumptive Kahn reaction in neurosyphilis. Of 115 examinations in untreated cases, complete agreement between this reaction and the clinical observations was obtained in 100. Of the remaining fifteen, thirteen positive or weakly positive reactions were obtained in syphilitic patients clinically free from neurosyphilis; one weakly positive reaction was obtained in a questionable case of syphilis, and one negative reaction in a case of neurosyphilis. Of 359 examinations in treated cases, complete agreement was obtained in 307. Of the remaining fifty-two examinations made on thirty-one patients, positive or weakly positive reactions were obtained on thirty patients who required no further treatment to the central nervous system, and four negative reactions on patients for whom further treatment was considered advisable.

Kline Slide Precipitation Test for Syphilis.—Miller compared the Kline microscopic slide precipitation test for syphilis with the Kolmer, Wassermann and Kahn tests. All tests agreed much more closely in nonsyphilitic than in syphilitic cases, so that a negative reaction given by any of the tests is of more value in ruling out syphilis than is a positive reaction of value in indicating syphilis.

Archives of Internal Medicine, Chicago

44: 625-786 (Nov.) 1929

*Constitutional Variation and Susceptibility to Disease. W. H. Brown, New York.—p. 625.
*Pathology of Pancreas in Nondiabetic Persons. S. Warren, Boston. —p. 663.
Calcium Studies: IV. Calcium Content of Cerebrospinal Fluid. A. Cantarow, Philadelphia.—p. 667.
Id.: V. Relationship Between Calcium Content of Cerebrospinal Fluid and Blood Serum. A. Cantarow, Philadelphia.—p. 670.
Effect of Mechanical Constriction of Hepatic Veins. W. W. Brandes, Chicago.—p. 676.
Opium Addiction: IX. Water Balance Studies During Administration and Withdrawal of Morphine. A. B. Light and E. G. Torrance, Philadelphia.—p. 693.
*Hepatogenic Hypoglycemia Associated with Primary Liver Cell Carcinoma. W. H. Nadler and J. A. Wolfer, Chicago.—p. 700.
*Tuberculosis of Aorta: Case. L. J. Adams, Montreal, Canada.—p. 711.
Boeck's Sarcoid. M. Bernstein, F. W. Konzlemann and D. M. Sidlick, Philadelphia.—p. 721.
Malignant Lesions of Gallbladder. E. S. Judd and C. J. Baumgartner, Rochester, Minn.—p. 735.
Carcinoma of Renal Cortex with Factors Bearing on Prognosis. E. S. Judd and J. R. Hand, Rochester, Minn.—p. 746.
*Eosinophilic Hyperleukocytosis in Hodgkin's Disease with Familial Eosinophilic Diathesis: Case. S. G. Stewart, Philadelphia.—p. 772.

Constitutional Variation and Susceptibility to Disease.—Brown asserts that constitution is a concrete reality which lends itself to measurement and test in accordance with the demands of modern science. The elementary conception of constitutional variation and its relation to disease involves only one assumption, and that is that all functional activities of the body are either performed or controlled by organs and tissues and that the organs are provided in such numbers and amounts as are necessary for the performance of their appointed functions. One need not know the function of a single organ in order to show that persons differ from one another in respect of their organic equipment, or that they are persons and not standard machines or standard mediums for the growth of pathogenic micro-organisms. It can be shown that variations in the mass and mass relations of organs are constantly occurring in response to demands made by changing conditions of life and that these variations in organic constitution are accompanied by variations in chemical constitution, all of which may well be confined within the usual limits of normal, for they are normal. It can also be shown that these differences and variations in physical and chemical constitution are associated with differences and variations in functional activity and susceptibility to disease or in the degree of natural immunity. Changing conditions of life affect individuals and groups, but, as individuals differ in respect of their inherent constitutional equipment, they differ also in their reaction to influences of all kinds. Some are capable of immediate and complete adjustment and others are slow to respond or are incapable of adjustment, so that when the members of a group are subjected to a change in the conditions of life or are exposed to infection under favorable or unfavorable conditions the response obtained varies according to the capacities of the individual. Hence there is some understanding of how and why one person differs from another in respect of the general property of susceptibility to disease and why it is that the susceptibility of persons and of populations is not fixed but varies from time to time, independent of any immunity that may be acquired through previous exposure to a given disease.

Pathology of Pancreas in Nondiabetic Persons.—Warren asserts that practically any lesion found in the pancreas of diabetic patients can be duplicated in the pancreas of nondiabetic patients, though the frequency of occurrence of lesions of the islands is much less in the latter group. Interstitial pancreatitis occurs too frequently in nondiabetic patients to be considered a characteristic lesion of diabetes. In many cases lipomatosis is related to the amount of body fat. Warren is convinced that it is impossible from a study of the pancreas to diagnose the presence or absence of diabetes.

Hepatogenic Hypoglycemia Associated with Primary Liver Cell Carcinoma.—A case of spontaneous hypoglycemia, apparently of hepatic origin, is reported by Nadler and Wolfer. Attacks of hypoglycemia dominated the clinical picture for three and a half months. Primary liver cell carcinoma, comprising roughly from 70 to 80 per cent of the total liver mass, with metastases in the regional glands, mediastinum and lungs, was found. The remaining liver structure was deficient in glycogen content and showed evidence microscopically of degenerative change. The pancreas contained a normal amount of insulin and did not present signs of pathologic changes. The tumor cells possessed no characteristic of islet cells and contained no insulin.

Tuberculosis of Aorta.—The case cited by Adams is said to be the twentieth reported instance of tuberculosis reaching the aorta by extension from a tuberculous process outside the aorta. In this case the involvement extended to the media, but no rupture occurred. Clinically, syphilitic aortitis was suspected on account of the history, shortness of breath, pain, pallor and the positive Wassermann reaction.

Eosinophilic Hyperleukocytosis in Hodgkin's Disease.—A case of Hodgkin's disease is reported by Stewart which showed a tremendous eosinophilic hyperleukocytosis together with a marked increase of eosinophils in the bone marrow and the affected lymph nodes. The exaggerated eosinophil response in this case was apparently due to (*a*) a well established familial allergic background, (*b*) a familial eosinophilic diathesis, (*c*) a personal allergic background, (*d*) the specific eosinophil stimulating effect of Hodgkin's disease itself and (*e*) the added effects of arsenic therapy. The literature is reviewed.

Archives of Neurol. & Psychiatry, Chicago

22: 865-1104 (Nov.) 1929

Evolution of Symbols in Development of Consciousness. L. Casamajor, New York.—p. 865.
Social Significance of Mental Disease. W. A. White, Washington, D. C. —p. 873.
Nervous Regulation of Sugar Metabolism: I. Experimental Studies. F. Hiller and A. Tannenbaum, Chicago.—p. 901.
Id.: II. Experimental Studies. F. Hiller and R. R. Grinker, Chicago. —p. 919.
Histology of Neuroglial Changes Following Cerebral Trauma. E. A. Linell, Toronto, Canada.—p. 926.
Tumors of Spinal Cord. C. A. Elsberg, New York.—p. 949.
*Changes in Spinal Cord in Anemia. A. Weil, Chicago and C. Davison, New York.—p. 966.
*Traumatic Cerebral Hemorrhage. H. S. Martland and C. C. Beling, Newark, N. J.—p. 1001.
Homolateral Involvement of Pyramidal Tract in Cerebral Tumors: Case. J. C. Yaskin, Philadelphia.—p. 1024.

Changes in Spinal Cord in Anemia.—For the purpose of this study, material was selected by Weil and Davison from fifty cases presenting various grades of anemia and changes in the spinal cord such as occur in pernicious anemia, secondary anemia due to leukemias, malignancies, Hodgkin's disease, lymphosarcomas and secondary anemias due to tuberculosis. Degenerative genuine myelopathy (myelitis) was found only in hemolytic anemias, mostly in the form of subacute combined degeneration (funicular myelitis). These changes were not found in anemia resulting from increased waste of blood, in hypoplastic anemia and in chlorosis. In leukemias the pathologic changes in the spinal cord are mainly those of myelomalacia, being produced by vascular changes such as hemorrhages and perivascular infiltrations. In anemias combined with severe cachexia and with neoplastic disease, the changes in the spinal cord could often be traced to other diseases, such as arteriosclerosis or syphilis. In the absence of these two diseases, the changes consisted mostly of secondary ascending degeneration of the posterior columns. Either these were produced by lesions of the posterior roots due to metastases to the vertebrae and the meninges or they were the sequelae of a local compression myelopathy (myelitis) producing secondary descending degeneration of cerebrospinal fibers. The theory that cancer produces a specific toxin and acts destructively on the spinal cord could not be substantiated. No degenerative genuine myelopathy (myelitis) in cancer of the stomach could be found. In the few cases of carcinoma of the stomach reported in the literature which showed changes in the blood characteristic of pernicious anemia and subacute combined degeneration of the spinal cord, Naegeli's theory appears most applicable—that such cases represented a combination of Addison's anemia with cancer of the stomach. The authors assert that the statement advanced that subacute combined degeneration of the spinal cord occurs in all types of anemia is not accurate. It should be limited to hemolytic anemia, especially to progressive pernicious anemia

and to rare cases of hemolytic anemia from other causes; for example, that caused by infestation with *Bothriocephalus latus*.

Traumatic Cerebral Hemorrhage.—Martland and Beling present a series of fatal cases of cranial traumatism studied at autopsy, particular attention being paid to those showing multiple miliary hemorrhages not immediately related to the traumatic focus and constituting the type known as multiple concussion hemorrhages. They also give a clinical review of a series of cases of concussion presenting late evidence of severe injury to the brain. Three hundred and nine necropsies made by one of the authors form the basis for this paper. They summarize the results of their study as follows: Injuries of the head with slight or no evidence of other external injuries are followed in a certain percentage of cases by death or by clinical symptoms indicating structural injury to the deeper parts of the brain. The injury to the brain consists of minute, multiple, punctate hemorrhages distributed chiefly in the areas supplied by the terminal branches of the central ganglionic system of vessels. They are also occasionally found in the centrum ovale, which is supplied by the long medullary arteries of the cortical system. They are rarely seen in the cerebral cortex or below the tentorium cerebelli. The frequency of these hemorrhages in the basal ganglions is thought to be due to a contrecoup effect on the cisterna interpeduncularis with consequent jamming back of fluid into the perivascular spaces. In this series, the incidence of this type of injury was almost 3 per cent, a much higher percentage than that reported by Cassasa. Microscopically, these hemorrhages are seen to surround the vessels, filling the Virchow-Robin spaces in a "ring-like" manner. This appearance, however, is not pathognomonic of trauma, as it is also seen in arsenical encephalitis, fat embolism and the hemorrhagic forms of influenzal encephalitis. The mechanical theory of concussion advanced by Cassasa appears to be the best explanation of the causation of these hemorrhages. Since it is asserted that similar lesions may be caused by fat embolism, especially in injuries of the head associated with fracture of the long bones or extensive traumatism of the panniculus adiposus, the question of fat embolism should be considered carefully in every case, and if possible eliminated by proper technic at necropsy and thorough histologic study. The authors believe that multiple concussion hemorrhages may explain many of the sequelae of cranial injuries. The clinical picture, varying with the location and extent of the lesions, may resemble that of paralysis agitans, of disseminated sclerosis, of progressive lenticular degeneration or of chronic epidemic encephalitis. Every case of injury to the head should be considered serious, and the patient should receive careful neurologic examination and observation, as an apparently trivial head injury may be followed by grave results and may be of great importance to civil and workmen's compensation courts in the estimation of disabilities and the assessment of damages.

Archives of Pathology, Chicago

8: 735-880 (Nov.) 1929

*Early Gastric Cancer. W. L. A. Wellbrock, Rochester, Minn.—p. 735.
*Erysipelas of Stomach. H. S. Martland and D. S. Eisenberg, Newark, N. J.—p. 744.
Cutaneous Lesions (Infectious Granulomas) on Feet of Albino Rats. A. H. Smith and T. S. Moise, New Haven, Conn.—p. 753.
Multiple Spleen Combined with Other Congenital Anomalies: Two Cases. F. C. Helwig, Kansas City, Mo.—p. 757.
*Renal Insufficiency in Amyloid Disease. J. F. Noble and S. G. Major, St. Paul.—p. 762.
Experimental Infestation of White Rats with Cysticercus Fasciolaris. J. E. Stumberg, Baltimore.—p. 775.
*Traumatic Porencephaly. R. H. Jaffé, Chicago.—p. 787.
Extradural Lipoma of Spinal Canal. J. A. Kasper and A. Cowan, Detroit.—p. 800.
*Issues at Stake in Grading of Tumors. S. P. Reimann, Philadelphia. —p. 803.
Untreated Human Bone Sectioned with New Knife. A. H. Morrell, New York.—p. 816.
Methods for Histologic Study of Normal and Diseased Bone. H. L. Jaffe, New York.—p. 817.

Early Gastric Cancer.—One hundred excised and resected small gastric lesions were studied microscopically by Wellbrock. He says that all chronic callous gastric ulcers are suspected of being carcinomatous and should be treated as such before and at the time of operation. The use of the microscope is the only means of distinguishing simple chronic gastric ulcer from early gastric cancer. The diagnosis cannot be made by clinical means, roentgenoscopy or the appearance of the gross specimen.

Erysipelas of Stomach.—A case of primary idiopathic phlegmonous gastritis is described by Martland and Eisenberg in which the appearance of the stomach was identical with that of the stomach in most cases described in the literature. There were no gross lesions of the mucous membrane, such as ulcer, carcinoma, abrasions or other injuries. The inflammation was diffuse, extending over the whole stomach, but limited almost entirely to the submucosa. The diffuse blushing of the mucosa, the ironing out of the rugae by edema and the thick, edematous condition of the submucosa filled with a watery, grayish fluid containing innumerable streptococci with occasional small abscess formations suggest the gross appearance of erysipelas, and the picture is similar in every way to that of extensive erysipelas of the skin with cellulitis of the subcutaneous tissues. The sharp demarcation of the suppurative process in this case by both the cardiac orifice and the pylorus, both of which have a mucosa which is rather tightly bound down, is similar, for instance, to the sharp demarcation and stoppage of facial erysipelas at the lower border of the mandible. Histologic examination showed the lesion to be almost entirely confined to the submucosa. It is characterized by extensive boggy edema, in which the cellular exudate is composed chiefly of lymphocytes and monocytes. The polymorphonuclears are abundant only in the central areas, where formation of abscesses occurs and where there is necrosis, with cell detritus and innumerable streptococci. This histologic picture is identical with that seen in erysipelas. The identification of the streptococcus by Birkhaug, as belonging serologically to the group of *Streptococcus erysipelatis*, completes the case and proves, as nearly as can be, that some forms of phlegmonous gastritis may be considered erysipelas.

Renal Insufficiency in Amyloid Disease.—Noble and Major report three cases of general amyloidosis in which renal insufficiency was proved by clinical, chemical and pathologic methods. This possible termination of amyloid disease seems to be little recognized in this country by either pathologists or clinicians. These cases represent the only proved instances of renal insufficiency in amyloid disease in a series of 11,000 necropsies recorded in the department of pathology at the University of Minnesota. The clinical symptoms and signs of an advanced amyloid kidney resemble those of chronic glomerulonephritis save for the fact that, in amyloid kidney, hypertension is the exception rather than the rule.

Traumatic Porencephaly.—A case of porencephaly in a woman, aged 22, is reported by Jaffé, which illustrates the great importance of the trauma in the etiology of this rare and interesting lesion. The trauma occurred immediately after birth and in its action on the brain could therefore be compared with the injuries that occur during birth. The histologic observations are discussed, especially in connection with the question of the reparatory processes in the immature central nervous tissue.

Issues at Stake in Grading of Tumors.—An attempt made by Reimann to grade the relative malignancy of 100 cases of cancer of the breast from the histologic picture of specimens obtained at operation gave false results, as determined by the later history of the patients from the follow-up records. A discussion of the biologic basis of this outcome, together with an inquiry into the rationale of the histologic grading of tumors, is made. The conclusion is that the grading of a tumor for the individual patient is impossible at present.

Canadian Public Health Journal, Toronto

20: 479-530 (Oct.) 1929

School Ventilation. F. M. R. Bulmer, Toronto.—p. 479.
New Narcotic Act. C. H. L. Sharman, Ottawa.—p. 484.
Health Supervision in Secondary Schools. J. E. Davey, Hamilton, Ont. —p. 489.
Pathology of Silicosis of Lung. T. H. Belt, Toronto.—p. 494.

Delaware State M. Journal, Wilmington

1: 175-192 (Oct.) 1929

Medical Profession and Public. W. O. LaMotte, Wilmington.—p. 175.

Florida M. Assn. Journal, Jacksonville

16: 155-190 (Oct.) 1929

Pyelovenous Backflow. L. Orr, Orlando.—p. 155.
Diabetes Insipidus: Results of Pituitary Extract and Pitressin Administration: Case. H. L. Bryans, Pensacola.—p. 161.
Surgery of Gallbladder and Ducts. J. K. Simpson, Jacksonville.—p. 164.
Experiences in Field of Roentgen Therapy in South Florida. J. H. Lucinian, Miami.—p. 166.
Diverticulosis and Diverticulitis of Colon. J. A. Herring, St. Petersburg.—p. 170.
Vomiting of Pregnancy. J. B. Brinson, Jr., Monticello.—p. 172.

Johns Hopkins Hospital Bull., Baltimore

45: 269-334 (Nov.) 1929

*Parathormone in Treatment of Radium Poisoning. F. B. Flinn and S. M. Seidlin, New York.—p. 269.
*Circulatory Failure of Diphtheria: I. Clinical Manifestations of Early and Late Failure. F. F. Schwentker and W. W. Noel, Baltimore.—p. 276.
Errors of Refraction, Age and Sex in Relation to Size of Form Field and Preliminary Data for Diagnostic Scale. C. E. Ferree, G. Rand and M. M. Monroe, Baltimore.—p. 295.
Bacterial Flora and Hydrogen Ion Concentration of Lower Human Ileum; Effect of Lactose and Acidophilus Milk Administration; and Possible Relationship of Ileal Flora to Chronic Ulcerative Colitis. M. Paulson, Baltimore.—p. 315.

Parathyroid Extract-Collip in Treatment of Radium Poisoning.—Three cases of "radium poisoning" in luminous dial painters have been subjected by Flinn and Seidlin to treatment by injections of parathyroid extract-Collip. The first case showed a loss of 45.6 per cent of radioactivity in seven weeks. The second case showed a loss of 57.7 per cent in seven weeks. The third case showed a loss of 50.5 per cent in seven weeks. All the three patients show characteristic roentgen lesions in the skull—round, sharply circumscribed areas of rarefaction. A piece of skull removed during necropsy in a recent case of "radium poisoning" showed similar roentgen lesions.

Circulatory Failure of Diphtheria.—Schwentker and Noel present evidence which they believe allows of a classification of the circulatory failures of diphtheria into two groups, early and late, on the basis of the clinical symptoms and picture presented. They feel that cases of early circulatory failure are an essential part of the diphtheria intoxication and are to be treated accordingly. The late circulatory failure is a complication of the disease caused probably by local inflammatory reactions incident to regeneration and repair.

Journal of Exper. Medicine, Baltimore

50: 551-701 (Nov. 1) 1929

Chemo-Immunologic Studies on Conjugated Carbohydrate-Proteins: III. Active and Passive Anaphylaxis with Synthetic Sugar-Proteins. W. S. Tillett, O. T. Avery and W. F. Goebel, Baltimore.—p. 551.
Liver as Source of Fibrinogen. D. R. Drury and P. D. McMaster, Baltimore.—p. 569.
Immunologic Relationships Among Pneumococci: IV. Active Immunization of Mice Against Type II Pneumococci by Vaccination with Yeast. J. Y. Sugg, L. V. Richardson and J. M. Neill, Nashville, Tenn.—p. 579.
Infectivity of Blood During Course of Experimental Yellow Fever. N. P. Hudson and C. B. Philip, Lagos, Nigeria.—p. 583.
Mechanism of Conservation in Kidneys of Winter Frog. J. Oliver and E. Shevky, San Francisco.—p. 601.
*Bacteriology of Blood and Joints in Rheumatic Fever. R. L. Cecil, E. E. Nicholls and W. J. Stainsby, New York.—p. 617.
Nasopharyngeal Flora in Health and During Respiratory Disease in Isolated Communities in Alabama and Labrador. E. L. Burky and W. G. Smillie, New York.—p. 643.
*Development in Tissue Cultures of Intracellular Changes Characteristic of Vaccinal and Herpetic Infections. T. M. Rivers, E. Haagen and R. S. Muckenfuss, Baltimore.—p. 665.
Vaccinal Immunity in Tissue Cultures. T. M. Rivers, E. Haagen and R. S. Muckenfuss, Baltimore.—p. 673.
Cutaneous Reactions to Polysaccharides and Proteins of Pneumococcus in Lobar Pneumonia. W. S. Tillett and T. Francis, Jr., Baltimore.—p. 687.

Bacteriology of Blood and Joints in Rheumatic Fever.—During the spring of 1928, Cecil et al. subjected twenty-nine patients with acute rheumatic fever to blood cultures, of whom nine, or 31 per cent, yielded a streptococcus. During the spring of 1929, thirty-one patients with acute rheumatic fever were studied by blood cultures, of whom twenty-six, or 83.9 per cent, yielded a streptococcus. The higher percentage of positive cultures in the 1929 series appears to have been due to improved cultural methods. Of the thirty-five strains of streptococci recovered from blood cultures, thirty-three have been classified as alpha streptococci *(Streptococcus viridans)*; one as a beta streptococcus (*S. hemolyticus*); and one a gamma streptococcus *(S. anhemolyticus)*. Some of the *S. viridans* strains produced little green on blood mediums. Agglutination and absorption tests indicate that the strains of *S. viridans* recovered from the blood of patients with rheumatic fever show a tendency to fall into specific biologic groups. In seven patients with rheumatic fever who were subjected to cultures from affected joints, five, or 71.4 per cent, yielded *S. viridans*. In three patients in whom green streptococci were recovered from both the blood and joint, agglutination and absorption tests proved the identity of the strains isolated from the two sources. These observations corroborate those of previous investigators and make it difficult to escape the conclusion that rheumatic fever is a streptococcal infection usually of the alpha, or *S. viridans*, type. The pathogenesis of rheumatic fever in respect to the joint lesions appears to be analogous to that of infectious arthritis and gonococcal arthritis. Bacterial allergy probably influences the clinical picture in all three conditions, but in each instance the joint manifestations are primarily dependent on localization of bacteria in the joint, with subsequent infection.

Development in Tissue Cultures of Intracellular Changes Characteristic of Vaccinal and Herpetic Infections.—Rivers and his associates describe a method by which typical vaccinal and herpetic lesions, including Guarnieri bodies and acidophilic nuclear inclusions, respectively, may be regularly produced in tissues inoculated and cultivated in vitro. Rabbit corneas handled in a special manner were used for this purpose.

Journal of Immunology, Baltimore

17: 295-375 (Oct.) 1929

Hypersensitiveness: XXVI. Comparative Study of Antibodies Occurring in Anaphylaxis, Serum Disease and Naturally Sensitive Man. R. A. Cooke and W. C. Spain, New York.—p. 295.
Inflammation and Immunity. E. L. Opie, Philadelphia.—p. 329.
*Further Experiments on Agent of Herpes. H. Zinsser and F. Tang, Boston.—p. 343.
Studies in Isohemagglutination. A. S. Wiener, M. Lederer and S. H. Polayes, New York.—p. 357.
Dick Test and Allergic Skin Reactions to Streptococcus Nucleoproteins. K. Ando, Dairen.—p. 361.
Horse Serum as Heterophilic Antigen. I. Davidsohn and S. G. Ramsdell, Philadelphia.—p. 365.

Experiments on Agent of Herpes.—The experiments reported by Zinsser and Tang deal, in the first place, with the survival of herpes virus in vitro in the presence of a free supply of oxygen and under conditions in which oxygen is completely removed by the addition of a reducing agent and a petrolatum seal. These experiments have been clear-cut in indicating that even a small amount of oxygen leads to a rapid deterioration of the virus and that the virus can be preserved for considerably longer periods under conditions of complete anaerobiosis. Since under no circumstances have they been able to cultivate the virus, this relationship indicates not that the anaerobic conditions have anything to do with the growth of the organisms but simply that oxidation leads to deterioration of the herpes agent. This fact, in addition to its practical significance in connection with experiments, would seem to them to form a strong argument against the identification of the so-called filtrable virus of herpes with any of the known bacteria or their mutation forms. Studies on the neutralization of herpes virus by convalescent encephalitic human serums are consistent with those of Kling, Davide and Liljenquist and confirm the irregularity noted in similar experiments by Flexner and Amoss. The only conclusion which they permit is that, in a considerable percentage of human beings, neutralizing serum constituents against herpes virus develop in the course of years. The relatively slight percentage of neutralizing serums in children under 7, as compared with adults, is significant in this regard, but it is questionable whether, in a series as small as theirs, the greater percentage of neutralizers among encephalitic convalescents has any meaning whatever. Recent work done by the authors favors the view that the various forms of encephalitis may be produced by any of a variety of filtrable agents which may become neurotropic for some as yet unknown reason. In regard to the nature of the neutralizing serum constituents, the authors are inclined to agree with Andrewes in the belief that the responsible virucidal

properties should not be regarded without further investigation as analogues of the ordinary bacterial antibodies. They have obtained no evidence whatever of immunization with the dead herpes agent, however large the quantities of the material used or however prolonged the series of injections; and efforts at passive immunization by the administration of in vitro neutralizing serum, together with or soon after the virus injection, have consistently failed.

Journal of Infectious Diseases, Chicago

45: 247-330 (Oct.) 1929

Preservation of Red Blood Cells for Hemolytic Reactions. G. B. Reed, Kingston, Ontario.—p. 247.
*Skin Test for Susceptibility to Smallpox: Human Endermal Reactions to Killed Vaccine Virus. S. B. Hooker, Boston.—p. 255.
Biologic Relationships of Morgan's Bacillus as Shown by Complement Fixation. L. C. Havens and C. Ridgway, Montgomery, Ala.—p. 263.
*Skin as Portal of Entry in Brucella Melitensis Infections. A. V. Hardy, M. G. Hudson and C. F. Jordan, Iowa City.—p. 271.
*Ammonium Sulphate Precipitation of Bacillus Typhosus Toxic Substances in Phenomenon of Local Skin Reactivity. G. Shwartzman, New York.—p. 283.
Hemophilus Sp. and Neisseria Sp. in Skin Abscesses in Rabbits and Guinea-Pigs. N. E. Gibbons, Kingston, Canada.—p. 288.
Pathogenicity of Species of Genus Brucella for Monkeys. I. F. Huddleson and E. T. Hallman, East Lansing, Mich.—p. 293.
Resistance of Scarlet Fever Streptococci to Action of Bacteriophage. J. E. Walker, New Brunswick, N. J.—p. 304.
Growth of Pasteurella Avicida in Body of Fowl. L. D. Bushnell and V. D. Foltz, Manhattan, Kan.—p. 308.
Hemolytic Streptococci of Beta Type in Certified Milk. E. Haynes, Madison, Wis.—p. 316.

Skin Test for Susceptibility to Smallpox.—Hooker asserts that endermal injections of heat-killed vaccine virus produce definite and easily interpretable reactions which are rather highly dependable as indexes of immunity to smallpox, correlating well with the various grades of response to living virus. The few discrepant reactions have been on the "false" positive side and are probably ascribable to other proteins which contaminate crude virus; the negative reaction as a criterion of susceptibility has so far been wholly reliable.

Skin as Portal of Entry in Brucella Melitensis Infections.—Experiments made by Hardy et al. show that the normal skin of guinea-pigs is more vulnerable as a portal of entry for *Brucella melitensis* than is the digestive tract, and the epidemiologic evidence indicates that the same is true of human beings. Furthermore, judging from experimental data, ingestion is not a satisfactory explanation for the natural and ready transmission of contagious abortion among animals, and the authors believe that, for animal infection also, more consideration should be given to the skin as a portal of entry for *Brucella melitensis*.

Ammonium Sulphate Precipitation of Bacillus Typhosus Toxic Substances in Phenomenon of Local Skin Reactivity.—The activity of the streptococcus bacteriophage recently described by Shwartzman was tested by Walker against thirty strains of hemolytic streptococci and thirty-eight strains of nonhemolytic streptococci. The most significant result was that the five strains of erysipelas streptococci were all susceptible to the bacteriophage while the six scarlet fever strains were resistant. Combining these results with those of Shwartzman gives a total of fourteen strains of hemolytic streptococci from scarlet fever, none of which were susceptible to the bacteriophage, and twenty-one strains from erysipelas, seventeen (81 per cent) of which were susceptible to the bacteriophage. Epidemic sore throat strains are also susceptible to lysis when freshly isolated. Streptococci may lose their susceptibility to lysis on cultivation on artificial mediums. Other strains may retain their susceptibility even after ten years' cultivation. All nonhemolytic streptococci tested were resistant to the bacteriophage.

Laryngoscope, St. Louis

39: 627-706 (Oct.) 1929

Philosophy of Meningitis. W. P. Eagleton, Newark, N. J.—p. 627.
Unusual Case of Lateral Sinus Thrombosis. G. E. Johnson, Philadelphia.—p. 640.
Tests for Hearing. B. M. Becker, New York.—p. 648.
Management of Abscess of Nasal Septum. I. W. Voorhees, New York. p. 652.
Exophthalmos Due to Chronic Abscess of Orbit and Chronic Frontal Sinusitis. C. G. Coakley, New York.—p. 654.
Irrigation of Antrum in Infants and Children Through Natural Orifice. I. B. Goldman, New York.—p. 657.
Irrigation of Antrum. S. Yankauer, New York.—p. 659.
Recurrent Polypi of Maxillary Sinus in Boy of Eight Years. J. W. Babcock, New York.—p. 661.
Lymphosarcoma of Tonsil. G. V. Browne, New York.—p. 662.
Composite Tumor of Tonsil: Case. G. V. Browne, New York.—p. 663.
Agranulocytic Angina: Case. W. Spielberg, New York.—p. 665.
Ludwig's Angina: Case. E. J. Stein, Lancaster, Pa.—p. 672.
Peritonsillar Abscess, Thrombosis of External Jugular Vein and Brain Abscess. H. M. Goodyear, Cincinnati.—p. 674.
Complications of Laryngectomy. J. E. MacKenty, New York.—p. 676.
Branchiogenetic Cyst of Larynx Removed by Thyrotomy. C. J. Imperatori, New York.—p. 679.
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New Bronchoscopic Instrument Table. S. Jesberg, Los Angeles.—p. 685.
New Instruments. A. M. Painter, Kansas City, Mo.—p. 687.

New England J. of Medicine, Boston

201: 801-856 (Oct. 24) 1929

Endocrine and Fatigue Headaches. N. C. Stevens, New York.—p. 801.
Observations on Sweating. F. M. Allen, Morristown, N. J.—p. 806.
*Mode of Action of Irradiated Ergosterol. W. Bauer and A. Marble, Boston.—p. 809.
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Synthalin-B in Diabetes Mellitus. H. Ulrich, Boston.—p. 814.
Trichiniasis with Widespread Infestation of Many Tissues. S. S. Horlick and R. E. Bicknell, Boston.—p. 816.
Progress in Tuberculosis, 1928-1929. J. B. Hawes, 2nd, and M. J. Stone, Boston.—p. 820.
Communicable Disease Problem. C. F. Dalton, Burlington, Vt.—p. 829.

201: 909-966 (Nov. 7) 1929

Dehydration. J. L. Gamble, Brookline, Mass.—p. 909.
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Melanotic Sarcoma of Penis: Case. F. H. Colby, Boston.—p. 924.
Suture of Kidney Wounds: Experimental. C. L. Deming, New Haven, Conn.—p. 924.
Resection of Half of Solitary Kidney: Case. T. N. Hepburn, Hartford, Conn.—p. 926.
Removal of Bilateral Renal Calculi. C. H. Neuswanger, Waterbury, Conn.—p. 928.
Nephropexy for Ureteral Kinks. A. Riley, Boston.—p. 929.
Edema. R. I. Lee, Boston.—p. 941.

Mode of Action of Viosterol (Irradiated Ergosterol).—The results of experiments made by Bauer and Marble would seem to suggest the conclusion that viosterol increases the amount of calcium which is absorbed from the gastro-intestinal tract. If this increased absorption occurs at a time when the body needs calcium, there results an increased deposition of calcium and an increase in the number of trabeculae. Complete metabolism studies on patients prove conclusively that there is a marked increase in calcium absorption when viosterol is administered. These results make it apparent why the use of viosterol in the treatment of infantile tetany, rickets and osteomalacia has met with such uniformly beneficial results. They are all disorders of calcium metabolism in which the mechanism at fault is absorption from the gastro-intestinal tract.

Physical Therapeutics, New York

47: 587-642 (Nov.) 1929

Ultraviolet Light and Calcium Metabolism. S. Davis, Indianapolis.—p. 587.
Physical Therapy in General Practice. E. L. Libbert, Lawrenceburg, Ind.—p. 590.
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Rational Cancer Routine with Newer Biopsy Method. G. A. Wyeth, New York.—p. 613.
End-Results in Electrosurgery of Malignant Epitheliomata. E. N. Kime, Indianapolis.—p. 619.

Public Health Reports, Washington, D. C.

44: 2635-2696 (Nov. 1) 1929

Vaccine Virus Pneumonia in Rabbits. C. Armstrong and R. D. Lillie.—p. 2635.
Experimental Studies of Natural Purification in Polluted Waters: II. Development of Suitable Dilute Medium. C. T. Butterfield.—p. 2647.

Rhode Island M. Journal, Providence

12: 165-180 (Nov.) 1929

Uses of Lipiodol in Neuro-Orthopedic Surgery. H. McCusker, Providence.—p. 165.
Pharyngeal Anesthesia. A. H. Miller, Providence.—p. 171.
Ozena. L. L. Albert, New York.—p. 175.

Southwestern Medicine, Phoenix, Ariz.

13: 423-474 (Oct.) 1929

Acute Otitis Media in Infants and Young Children. J. J. McLoone, Phoenix.—p. 423.
Differential Diagnosis of Commoner Diseases of Gastro-Intestinal Tract. F. J. Milloy, Phoenix.—p. 425.
Functional Colitis. R. J. Callander, Tucson.—p. 428.
Conduct of Difficult Obstetric Case. F. B. Sharp, Phoenix.—p. 435.
Fracture of Pelvis: Ten Cases. R. Ferguson, Bisbee.—p. 440.
Plea for Early Diagnosis and Early Treatment of Cancer. E. P. Palmer, Phoenix.—p. 441.
Principles of Medical Ethics. R. T. Franklin, Glendale.—p. 443.
Malaria in Tabes Dorsalis. G. E. Shields, Phoenix.—p. 444.

Surgery, Gynecology & Obstetrics, Chicago

49: 593-736 (Nov.) 1929

*Value of Radiology in Diagnosis of Perforated Peptic Ulcer. R. T. Vaughan and H. A. Singer, Chicago.—p. 593.
Dislocation of Testis. E. P. Alyea, Baltimore.—p. 600.
*Spinal Anesthesia for Head, Neck and Thorax: Relation to Respiratory Paralysis. H. Koster and L. P. Kasman, New York.—p. 617.
Unusual Bony Injuries About Hip Joint. H. F. Johnson, Omaha.—p. 630.
Krukenberg Tumor of Ovary: Two Cases. R. Fallas, Los Angeles.—p. 638.
*Ovarian Transplantation: Thirty-One Cases. C. C. Norris and C. A. Behney, Philadelphia.—p. 642.
Salpingitis: Analysis of 545 Cases. C. E. Farr and R. T. Findlay, New York.—p. 647.
*Statistical Report of Cautery Surgery in Uterine Carcinoma. J. F. Percy, Los Angeles.—p. 663.
Perineal Prostatectomy. F. Hinman, San Francisco.—p. 669.
Delivery of Uterus. A. H. Curtis, Chicago.—p. 682.
Pneumarthrosis of Knee. A. M. Rechtman, Philadelphia.—p. 683.
*Opening Parietal Peritoneum in Laparotomy. F. H. Lahey, Boston.—p. 687.
*Parathyroid Extract-Collip in Eclampsia and Allied Conditions. R. E. López, New York.—p. 689.
Exposure and Anatomic Relations of First Rib in Extrapleural Thoracoplasty. T. S. Moise, Bangor, Me.—p. 694.
*Fundusectomy. F. G. Connell, Oshkosh, Wis.—p. 696.
Complete Laceration of Perineum. G. V. S. Smith and J. R. Linton, Boston.—p. 702.
*Ober Operation for Congenital Clubfoot. C. H. Heyman, Cleveland.—p. 706.
Embryonal Adenomyosarcoma of Kidney in Adult. E. F. Kilbane and C. W. Lester, New York.—p. 710.

Value of Radiology in Diagnosis of Perforated Peptic Ulcer.—Seventy-two cases diagnosed perforated ulcer were examined by Vaughan and Singer radiologically for pneumoperitoneum at the time of admission to the hospital. In sixty-three of the seventy-two patients the diagnosis of a perforated ulcer was definitely established. Of these sixty-three, fifty-four had free intraperitoneal air as determined fluoroscopically. In the nine remaining patients the evidence of perforated ulcer was not conclusive, as pneumoperitoneum was absent, laparotomy was not performed, and necropsy was precluded by recovery. The clinical picture in the nine unproved cases corresponds to that seen in perforations which become spontaneously sealed following the escape of a limited amount of gastric or duodenal content. The reason for the lesser frequency of pneumoperitoneum in these *formes frustes* cases is probably the same which explains the mildness of the course; viz., a small leak and trifling leakage. During the period in which these perforated ulcer cases were observed, spontaneous pneumoperitoneum due to other causes (exclusive of trauma) was encountered nine times. In all but two of the nine cases the correct diagnosis as to the cause of perforation was rendered clear by the history and clinical observations.

Spinal Anesthesia for Head, Neck and Thorax.—The experience of Koster and Kasman with head anesthesia over a fairly large number of cases has convinced them not only that the method is safe but that it is universally applicable. The anesthesia has not been perfect in all cases. There have been instances in which the patient has complained of painful sensations. This is attributed to inexperience on the authors' part because it is believed that greater familiarity and a larger series of cases will so modify the dosage and the amount of fluid extracted from the cerebrospinal system as to enable complete and accurate control of the amount of diffusion of the drug and the amount of concentration of the drug at any desired level. Variation in the position of the needle point in the spinal subarachnoid space is believed to be responsible for the few cases in which there has been failure to get complete and satisfactory anesthesia.

Ovarian Transplantation.—Norris and Behney report good results in thirty-one cases of ovarian transplantation. Menopausal symptoms were not manifest in any of the cases. The authors assert that ovarian transplantation is not a substitute for conservation of the ovary in its normal situation and should be reserved for those cases in which this is inadvisable. The life of the transplanted ovary is probably not more than two or three years. Grafts frequently become tender for a day or two each month. They rarely give serious trouble. The operation is practically without mortality or morbidity. Most of the grafts "take." When the menopause occurs, it is generally more prolonged, gradual and analogous to the normal menopause than if grafting had not been performed.

Cautery Surgery in Uterine Carcinoma.—Percy bases his report on 134 cases treated with the cautery since 1903. Twenty-seven patients are alive and well from three to nineteen years. The pathologic condition in these twenty-seven symptom-free cases was reported by the laboratories as follows: squamous cell carcinoma, sixteen cases; adenocarcinoma, six cases; and carcinoma, five cases. Only a small percentage of these patients are classed as early cases, i. e., cases without involvement of one or both broad ligaments over periods of from eight to eighteen months. Some were recurring cases in which operation had been performed previously. Among these were a small number in which either hysterectomy had been done or radioactive treatments had been given, or both preoperatively or postoperatively. In other words, few were better than borderline and the many were in the usually considered inoperable class.

Opening Parietal Peritoneum in Laparotomy.—Lahey describes his procedure as follows: The surgeon and assistant grasp the peritoneum in two pairs of forceps, lift on the forceps so that the lax peritoneum is pulled into a peak, and, with the blunt handle of the knife, press into close contact the two underlying moist surfaces of the peritoneum. In addition to holding the two surfaces of the peritoneum together, the knife handle, as it is pushed downward, presses away any underlying bowel or omentum. As soon as the two folds of parietal peritoneum have been brought into contact, an incision may be made in the apex of the fold without danger of including a loop of bowel or a section of omentum in the fold, since the interposition of either bowel or omentum between the two folds of peritoneum prevents the close adhesion of their two surfaces by negative pressure.

Parathyroid Extract-Collip in Eclampsia and Allied Conditions.—In the four cases reported by López, a few units (from 10 to 40) of parathyroid extract initiated a diuresis usually beginning at the second or third day after injection, which increased daily for four or five days until the edema disappeared. In two cases there was a decrease of blood pressure amounting to 40 millimeters of mercury. The subjective signs of dizziness, headaches, disturbances of vision and muscular cramps disappeared in the same ratio as the edema. In the cases of two patients who had convulsions and other evidences of tetany, the convulsions ceased shortly after the first injection. In no case was labor started by the injections and in one patient who had come in labor, the pains disappeared and did not return while the treatment lasted. In the patients who came with a live fetus, the fetal heart did not suffer change and went through in a normal way until labor started. The calcium in the blood serum did not show an appreciable increase after the use of the parathyroid extract.

Fundusectomy.—It is suggested by Connell that for cases without stenosis or other sequelae, the acid secreting fundus be removed, and the antropyloroduodenal mechanism be allowed to remain. Such an operation should be less dangerous and should be easier to perform, and the result would be more anatomic with diminished acid secretion.

Ober Operation for Congenital Clubfoot.—In Heyman's experience the Ober operation has proved to be a satisfactory procedure for the correction of congenital clubfoot not amenable to manipulation and retentive dressings. In resistant cases this operation can be done early without fear of subsequent disturbance in growth, and the period of active treatment can be materially shortened.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British J. Bio-Physics, London

2: 16-34 (Nov.) 1929

Application of Faradism in Relief of Pain. L. Shillito.—p. 19.
Technic of Dental Electrotherapy. F. Talbot.—p. 20.
Stereoscopic Roentgen Rays. A. T. K. Moir.—p. 21.
Neurasthenia: Cause, Treatment and Cure. F. Brook.—p. 23.
High Frequency in Therapeutics: 4. Local Treatment by High Frequency Currents. E. Browning.—p. 25.
Infantile Spinal Paralysis or Infantile Palsy and Electrical Treatment. F. W. Alexander.—p. 27.

British J. Exper. Pathology, London

10: 281-346 (Oct.) 1929

Action of Australian Snake Venoms on Plain Muscle. C. H. Kellaway.—p. 281.
*Comparison of Pathologic Effects of Prolonged Exposure to Carbon Monoxide with Those Produced by Low Oxygen Pressure. J. A. Campbell.—p. 304.
Occurrence of Mitoses in Normal and Malignant Tissues in Vitro. A. Fischer and R. C. Parker.—p. 312.
Filtrable Fibrosarcoma of Fowl. A. M. Begg.—p. 322.
Chemical Mechanisms Exploited in Use of Meat Media for Cultivation of Anaerobes. E. Lepper and C. J. Martin.—p. 327.
*Experimental Carcinogenesis: Local Resistance of Skin to Development of Malignancy. W. Cramer.—p. 335.

Comparison of Pathologic Effects of Prolonged Exposure to Carbon Monoxide with Those Produced by Low Oxygen Pressure.—It is shown by Campbell that in chronic carbon monoxide poisoning in animals the pathologic effects resemble closely those of prolonged exposure to low oxygen pressure in the inspired air; the main changes are venous congestion with atrophy of certain cells (e. g., liver, heart muscle near the epicardium), edema and dropsy indicating that heart failure is the cause of inability to tolerate prolonged exposure to carbon monoxide. The organs showing most marked congestion and its sequelae are the liver, lungs, heart muscle near the epicardium and the brain. Haldane's view that carbon monoxide acts purely by interfering with the oxygen supply to the tissues is supported. Power to tolerate carbon monoxide—just as in the case of low oxygen pressure in the air—depends on the ability of the vital organs, particularly the heart, to continue to function under a low tissue oxygen tension; the tissue oxygen tension is not brought back to the normal level by so-called acclimatization under severe degrees of oxygen want.

Local Resistance of Skin to Development of a Malignant Condition.—Observations are reported by Cramer which supply evidence that the development of a carcinoma is not dependent entirely on changes in the epithelial cells, but that there are local inhibitory factors capable of keeping the malignant development in check, so that the immediate cause of the genesis of a carcinoma may be the local removal of an inhibition residing in tissue elements other than the epithelial cells. This resistance is not a fixed property of the tissue but can be made to shift by experimental interference, and can sometimes be broken down locally by cautery of the tissues underlying a hyperplastic condition of the epithelium. The nature of the tissue elements in the skin which represent this resistance must remain at present a matter for speculation. In view of the shifting nature of this resistance, it may be suggested that it is connected with the wandering cells which accumulate immediately underneath the hyperplastic epithelial cells of a skin subjected to tar painting. The process of carcinogenesis appears therefore not as a continuous one but as composed of two phases: a process of long duration which induces in epithelial cells the condition of "potential malignancy," which is kept in check by the local resistance of other tissue elements; and, secondly, a local breaking down of this resistance, which allows of an immediate malignant development of the potentially malignant cells.

Journal of State Medicine, London

37: 621-682 (Nov.) 1929

Climatology and Sports Hygiene. M. Conway.—p. 621.
Tuberculosis Campaign in Ireland. W. J. Thompson.—p. 624.
Organization of Control and Eradication of Animal Diseases in Switzerland. M. Burgi.—p. 632.
Campaign Against Tuberculosis in Switzerland. E. Bachmann.—p. 648.
Nutritive Value of Fatty Foods. K. MacLennan and P. N. Williams.—p. 654.
Physiology of High Altitudes with Regard to Pathology. A. Loewy.—p. 665.
Alpine Research Stations of Switzerland. W. R. Hess.—p. 671.

Lancet, London

2: 803-858 (Oct. 19) 1929

Abdominal Surgery. D. P. D. Wilkie.—p. 803.
*Syphilitic Disease of Pulmonary Arteries: Case. D. C. Hare and J. M. Ross.—p. 806.
*Subcutaneous Nodules in Scalp. F. J. Poynton and A. Moncrieff.—p 812.
*Tumor Immunity: Treatment by Autovaccination of Implanted Mouse Carcinoma. T. Lumsden.—p. 814.
Sebaceous Cyst Undergoing Malignant Changes. A. C. Morson and C. R. Lane.—p. 817.
Outbreak of Scarlet Fever Among Adults. J. Todesco.—p. 817.
Brucella Abortus Infection in Man. H. E. Bloxsome.—p. 818.

Syphilitic Disease of Pulmonary Arteries.—A well defined group of cases exists in which arterial disease is confined or largely confined to the pulmonary circuit. These cases differ from other cases with arterial lesions in the lesser circuit in that there is no antecedent pulmonary, cardiac or bronchial lesion. Twenty-three fully reported cases have been collected from the literature, and a further case is described by Hare and Ross. It is found that syphilis is by far the most important etiologic factor in older patients. Primary noninflammatory sclerosis of unknown etiology is found in younger patients. In the syphilitic cases the lesions in the intrapulmonary arteries take the form of an obliterative arteritis, usually most severe in the smaller branches and arterioles. This condition leads to a raised blood pressure in the lesser circuit. Dilatation and hypertrophy of the main pulmonary artery follows, with atheroma of the right and left pulmonary arteries and larger branches, whether or not the latter show inflammatory lesions. The right side of the heart becomes greatly dilated and hypertrophied. Clinically the cases are characterized by dyspnea, cyanosis and hemoptysis, and in the later stages by progressive congestive heart failure with a regular pulse. Syphilitic arteritis of the pulmonary arteries, while admittedly rare, is worthy of notice, since by early diagnosis antisyphilitic treatment might afford some hope of amelioration of the symptoms.

Subcutaneous Nodules in Scalp.—The early age, 3 and 2 years, respectively, of the patients seen by Poynton and Moncrieff was one of the remarkable features of the cases, and this, combined with the pains in the joints and limbs at an age too old for scurvy and, in general terms, too young for rheumatism, is at once perplexing. The deposits in the scalp in these two cases were especially numerous on the vault of the cranium and not in the occipital region; but except for this they were suggestive of unusually large and numerous rheumatic nodules, such as may occur in occasional examples of virulent rheumatism. Further, they varied in size, diminishing in the second case so obviously that every one was struck by such an occurrence when the disease itself was clearly advancing. There were no nodules on the elbows and knees or elsewhere, except for those lying below the eyebrows in the first case. The rheumatic pains in the joints and muscles were striking, and in the second case puffy swellings around the wrist joints were observed in the hospital. In the first case the arthritic symptoms had disappeared before the patient came under the authors' care, but the history was sufficiently definite to make the diagnosis of acute rheumatism a probable one to earlier observers. The blood picture in the first case gradually developed along the lines of an acute leukemia, and when this child was taken from the hospital the pigeonhole into which the case was placed was that of leukemia. In the second case the nearest pigeonhole appeared to be lymphadenoma. The authors do not name this condition but emphasize the salient features of the cases described, so that other observers may be able to recognize the condition—subacute onset, glandular enlargement, arthritic pains and swellings, nodules in the scalp, fever, mononuclear response in the blood, slight enlargement of the spleen, serious course and severe nature of the malady, with terminal hemorrhages in various situations.

Treatment by Autovaccination of Implanted Mouse Carcinoma.—In thirty of fifty-five mice in which mammary

cancer (M. 63) was growing progressively, Lumsden says the tumors were caused to regress by autovaccine treatment (injection of 1 per cent solution of liquor formaldehydi in physiologic solution of sodium chloride into the growth) and the mice so cured showed a high degree of immunity against subsequent implantations of the tumor.

Quarterly J. Medicine, London

2: 1-133 (Oct.) 1929

*Visceroptosis and Allied Abdominal Conditions Associated with Chronic Invalidism. H. Bedingfield.—p. 1.
Electrical Axis of Heart as Indicator of Changes in Ventricular Predominance. H. W. Jones and R. E. Roberts.—p. 67.
*Storage of Iron Following Oral and Subcutaneous Administration. C. J. Polson.—p. 77.
*Observations on Respiratory Exchange and Basal Metabolic Rate in Pulmonary Tuberculosis. R. Williamson.—p. 85.
Study of So-Called Lipoid Nephrosis. H. Gainsborough.—p. 101.
*Inquiry into Fate of Thyroxin in Treatment of Nephrosis. R. Platt.—p. 129.

Visceroptosis and Allied Abdominal Conditions Associated with Chronic Invalidism.—Bedingfield analyzes 152 cases in which the symptoms centered around the gastrointestinal tract, symptoms which were uncoordinated and for which no recognizable cause could be found. These patients fell into two groups. One group, numbering forty-one, had already received investigation and treatment without obtaining relief before coming under Bedingfield's care. They may be regarded as presenting the condition in its established, chronic form. The other group, numbering 111, consisted of individuals seeking advice for the first time and therefore presenting a diagnostic as well as a therapeutic problem. The four cardinal symptoms of the first group were general weakness, abdominal discomfort, constipation and flatulence. Apart from these four cardinal symptoms, all the individuals in this group displayed other departures from normal functioning, which in their order of frequency are: fibrositis, myalgia, muscular rheumatism; susceptibility to catarrhal infections; pyrexia; digestive disturbances; mucomembranous colitis; vasomotor symptoms. Delayed puberty, menstrual irregularities, dysmenorrhea, and a persistent leukorrhea were found in no less than 95 per cent of the women. Attacks of asthma replaced abdominal symptoms from time to time in seven cases. True migraine was present in five. Tinnitus was a troublesome symptom in as many as twenty, but only two presented the signs of otosclerosis. Insomnia of a more or less severe degree was complained of by 75 per cent. The remaining 25 per cent stated that they could never secure a "natural" sleep; that is, they claimed to be either very restless, or slept so heavily as to awake "dazed" in the morning. Eight of these patients were troubled from time to time by "fugues." The association of malnutrition, poor muscle tone and abnormal mental reactivity is characteristic for the whole group of cases. This association appears to depend on a congenital, possibly inherited inability of the individual to adapt himself satisfactorily to the various strains and stresses of life. One of the failures of adaptation may be lack of resistance to degrees of infection and toxemia which have no effect on normal individuals. This may account for the failure to discover the "toxin" present in cases of autointoxication. When sensations from malfunctioning viscera rise into consciousness in an individual who is the subject of repressions based on an inferiority complex, these tend to be utilized in the form of symptoms to reinforce the repression. The malfunction may originate peripherally from local causes, as improper feeding, or centrally from weakening of inhibition produced by fresh mental conflicts. Later, with the establishment of a vicious circle of malfunction—symptoms—malfunction, actual tissue changes may occur in the affected organs, rendering them incapable of a return to normal function. When this occurs there is little chance of restoring the individual to his or her particular standard of health. The treatment of the condition is essentially preventive.

Storage of Iron Following Oral and Subcutaneous Administration.—In the experiments made by Polson, the liver was the principal site of iron storage. A smaller amount was stored in the spleen and lymphatic glands. The rate of storage of iron in the liver was faster after subcutaneous than after oral administration, but neither was as fast as the intravenous route. The process of iron storage in the liver was probably identical irrespective of the mode of administration. The small excess of iron in the spleen supported the view that the greater amount found there after intravenous administration was the result of a transfer of iron from the lungs to the spleen. The cecum and kidneys contained an excess of iron and were probably concerned in its excretion. Excess of iron in the bone marrow was not observed, nor was there undue activity of its cells. The lungs played no part in the metabolism of iron.

Respiratory Exchange and Basal Metabolic Rate in Pulmonary Tuberculosis.—The basal metabolism of thirty-eight cases of pulmonary tuberculosis has been investigated by Williamson. In nineteen it was higher than plus 10 per cent (the average being plus 20.5 per cent), and in the other half it was within plus or minus 10 per cent of the normal (the average being minus 0.75 per cent). With certain exceptions (inanition, cachexia), the more severe the disease the higher is the basal metabolic rate. In cases of pulmonary tuberculosis in which fibrosis is taking place, the basal metabolic rate is within normal limits. The pulmonary ventilation is increased in pulmonary tuberculosis. The pulmonary ventilation varies directly with the basal metabolic rate, and either can be used in following the progress of a case. Rest influences the basal metabolism and pulmonary ventilation favorably. It is suggested that diminution in pulmonary ventilation is an important factor in the treatment of pulmonary tuberculosis. The pulmonary ventilation may be increased when the metabolism is normal. The percentage of carbon dioxide in the expired air is less than normal in chronic pulmonary tuberculosis; the more extensive the disease, the greater is the deviation from normal. The respiratory quotient is lowered slightly in cases of long duration. Observations on the respiratory exchange in pulmonary tuberculosis give information with regard to the activity of the disease and repeated examinations provide an index as to progress.

Inquiry Into Fate of Thyroxin in Treatment of Nephrosis.—It is well known that patients suffering from chronic nephrosis exhibit an extraordinary tolerance to thyroxin, whether administered orally or intravenously. Experiments are described by Platt which in his opinion demonstrate that this is not due to rapid excretion of thyroxin by the kidney. It is therefore presumed that thyroxin is either rapidly destroyed in the body or its action inhibited, but it is suggested that such an inhibition does not depend on the increased level of the blood cholesterol which is commonly found in these cases.

Archives des Maladies de l'App. Digestif, etc., Paris

19: 805-924 (July) 1929

Permanent Partial Volvulus. P. Chêne, J. Kimpel and A. Ismojick.—p. 805.
*Dynamic Ileus: Surgical Treatment. M. Théodoresco.—p. 816.
Diabetes Mellitus. A. Landau, M. Fejgin and I. Lewicki.—p. 825.

Dynamic Ileus: Surgical Treatment. — Théodoresco describes a modification of the usual operative methods. He makes a fistula which can be closed at any time without further extensive surgical intervention, thus avoiding the danger of infection. He first fixes the terminal segment of the ileum to the abdominal wall by means of a circular suture. After this he inserts a figure-of-eight suture the ends of which emerge as far as possible from the wound and are sealed at the point of emergence with collodion. He then opens the ileum and into it inserts a rubber tube or a large urethral catheter, which is fixed by a tightly drawn circular suture. The operative wound is closed without suture of the muscles; in the skin, however, an opening 2 cm. wide is preserved, to which the external part of the circular peritoneal flap is fixed. To insure greater firmness a strip of gauze may be placed between the drain and the skin. Especial attention is given that the dressings are well separated from one another. In urgent laparotomies when the danger of occurrence of a postoperative ileus is imminent, the technic is about the same. However, the intestinal loop is not opened immediately but only when it becomes imperative to do so. To avoid closing of the edges of the wound, a tube of hard rubber or a pad of sterile gauze and cotton is inserted. When the intestinal mechanism is restored to normal and the continuation of the opening is deemed superfluous, the wound is

closed by cautious withdrawal of the tube, which should not come in contact with the sterile edges of the wound. The circular peritoneal flap is sterilized by means of a tampon soaked in an antiseptic (Théodoresco uses iodized ether). The ends of the figure-of-eight suture are now drawn together over a gauze and cotton pad, thus closing the wound. Théodoresco considers the advantage of his modification to be the fact that the fistula can be closed at any time without surgical intervention.

Gynécologie et Obstétrique, Paris

20: 129-276 (Aug.) 1929

Relations Between Pituitary Body and Female Genital Organs: Physiology. L. Brouha.—p. 129.
*Id.: Clinical Study. J. L. Wodon.—p. 190.
Myomectomy in Nonpregnant Women. E. Mériel and Baillat.—p. 223.
*Myomectomy in Relation to Pregnancy. A. Brindeau.—p. 255.

Relations Between Pituitary Body and Female Genital Organs.—On the basis of an extensive study of the literature, Wodon draws the following conclusions: Pregnancy always causes anatomic hypertrophy of the pituitary body. This hypertrophy corresponds to an increase in the functional activity of the glandular tissue, which reaches its height at the ninth month of gestation. The rôle of this abundant secretion is not yet known. Hypertrophy of the pituitary body results in compression of the optic chiasm; after delivery, normal vision is restored. The pituitary body is not the only gland to develop an increased activity during pregnancy; all the endocrine glands become hypertrophied. Castration and the menopause, as well as puberty and menstruation, are characterized by a reaction in the pituitary body. Severe headaches during the latter period may be the direct consequence of a pituitary congestion, whereas the occurrence of obesity following castration may be linked to an atrophy of the gland. Destruction of the pituitary gland by trauma or by a tumor causes atrophy of the ovaries, which is followed by amenorrhea and sterility in the adult and a special type of infantilism in the child, with concurrent lack of development of the secondary sexual characteristics. The occurrence of a transitory acromegaly during pregnancy and glycosuria are related to changes taking place in the gland. Therapy with extracts of the gland has proved its efficacy for certain conditions. The hormones of the anterior lobe of the gland are also found in the blood and urine; they are increased during pregnancy. Animal experiment has given microscopic evidence of the relation between this occurrence and the changes in the ovaries. According to Wodon, a dose of from 2 to 5 international units of extract of the posterior lobe of the pituitary constitutes a fairly constant ecbolic, due attention being paid to contraindications such as mechanical obstruction and hypertonia of the uterus. Preparations of the extract, devoid of hypertensive action, are advantageous in cases of toxemia of pregnancy. The extract is especially effective in cesarean section or to induce delivery after premature rupture of the fetal membranes and coincident loss of amniotic fluid. Wodon believes that further research in this direction will result in successful therapy.

Myomectomy in Relation to Pregnancy.—On the basis of results obtained through a questionnaire and his personal experience, Brindeau states that myomectomy does not preclude future pregnancies. These evolve normally and complications are rarely known to ensue. In general, the existence of fibromas in the uterus does not affect the course of pregnancy. However, surgical intervention may be indicated in case of severe pain, rapid growth of the fibroma, danger of compression, torsion of the pedicle or impaction of a pelvic tumor. In most instances myomectomy can be performed by abdominal incision; the results are favorable both for the mother and for the fetus (4 per cent mortality and 90 per cent full term pregnancies). Myomectomy during labor is seldom necessary because fibroma praevia at the end of pregnancy is rare. The operation should be made only after delivery of the fetus by cesarean section. Brindeau advises hysterectomy when multiple or submucous tumors are present and in cases of hemorrhage and infection. Vaginal myomectomy during pregnancy is indicated only in cases of fibrous polyps, tumors of the cervix projecting into the vagina and submucous tumors projecting into the lumen of the cervix.

Presse Médicale, Paris

37: 1213-1228 (Sept. 18) 1929

*Tuberculosis of Intestine in Chronic Pulmonary Tuberculosis: Surgical Treatment. L. Bonafé.—p. 1213.
*Plasmochin in Treatment of Malaria. F. de Mello.—p. 1215.
Interrelation of Hypertrophy of Prostate and Stricture of Urethra. L. Strominger.—p. 1217.
*Painful Claudication of Lower Extremities, Caused by Vasodilatation in Hyperglycemia. A. and L. van Bogaert.—p. 1219.

Tuberculosis of Intestine in Chronic Pulmonary Tuberculosis.—Bonafé reports this occurrence in seventeen patients. The extent of the complication is often difficult to determine by clinical methods and exploratory operation is therefore indicated. In one patient, aged 17, gastro-intestinal disturbances were not noted clinically, although increasing loss of weight persisted. Roentgen examination revealed retardation in the filling of the cecum and the large intestine. Laparotomy disclosed extensive involvement. The patient died several weeks later. A second patient, aged 19, in whom a pneumothorax was induced two years previously and who was suffering from gastric disorders, on roentgenologic examination showed an enlargement of the stomach with retardation of the emptying of the cecum. Her intestinal condition was perfect three years following the operation, although a second pneumothorax was induced. Another patient, aged 21, had been suffering from chronic diarrhea. Following an artificial pneumothorax a series of pseudo-appendicular attacks with a rise in temperature and diarrhea were noted. Resection of the involved intestine for the length of about 35 cm. was performed. The patient recovered and gained 3 Kg. (6⅔ pounds). A relapse took place the following year, however, and death ensued. In four patients with pain, diarrhea and involvement of the appendix, surgical intervention was followed by recovery. One of these, however, died of tuberculosis of the larynx one year later. The remaining ten patients presented intestinal disorders with diarrhea. In six of these the result of surgical intervention was satisfactory. On the basis of nine recoveries, and three cases showing considerable improvement as compared to five failures, Bonafé advises early operation, unless contraindicated by the pulmonary condition. In none of the cases, however, was this aggravated by the intervention.

Plasmochin in Treatment of Malaria.—De Mello reports the results of his experience in Portuguese East India. Patients who were removed from malarial districts after treatment did not show a recurrence of the disease during the nonepidemic season. In 17 per cent of those who remained in the infected villages, a recurrence of the fever was observed. However, it was not evident whether this was due to reinfection or not. On the basis of his observations and a review of the literature, de Mello concludes that plasmochin has a destructive action on the gametes of all types of human malarial parasites and also on the asexual forms of *Plasmodium vivax* and *Plasmodium malariae*. When combined with quinine it destroys also the asexual forms of *Plasmodium falciparum*. The hemoglobin content of the blood is increased by the medication, and the size of the spleen is decreased. Although the administration of the drug is in general harmless, medical supervision is advised. According to de Mello the destructive action of plasmochin on the gametes of malarial parasites is evident, but he stresses the need for experiment of a larger scale before definite conclusions as to its efficacy can be reached.

Painful Claudication of Lower Extremities, Caused by Vasodilatation in Hyperglycemia.—The van Bogaerts describe this occurrence in three patient who came under their observation. In two of these, ovarian dysfunction was present; in the third a history of hereditary syphilis was obtained and the patient had coxalgia of syphilitic origin, although the Wassermann reaction of the blood was negative. In this patient glycemia was present. Injections of 20 units of insulin, three times a week for two months, were given. After the eighth injection, the painful attacks had been relieved. In the second patient, aged 29, hyperglycemia, ovarian dysfunction and tachycardia were present. The basal metabolism was decreased 8 per cent. Electrotherapy and the administration of ovarian and thyroid extracts had been of no avail. Injections of 20 units of insulin, three times a week, resulted in complete recovery after eight months. The patient gained 7.8 Kg. (17⅓ pounds) and the normal functioning of the ovaries was restored. In the

last patient observed, a woman, aged 56, the syndrome of vascular dilatation appeared less than one year after roentgen castration for fibroma. Glycemia and cardiac symptoms were present. After six injections (each of 0.2 Gm.) of acetylcholine, her condition was relieved. The van Bogaerts emphasize the fact that ovarian deficiency causes a hypersecretion of epinephrine.

37: 1229-1244 (Sept. 21) 1929

Disinfection of Nose and Pharynx. G. Worms.—p. 1229.
*Heredity of Tuberculosis. M. Sacorrafos.—p. 1231.
Etiology of Inflammatory Complications of Dengue. N. Kyriazidès.—p. 1233.
Traumatic Peritonitis. J. Deroide and L. Pétel.—p. 1235.

Heredity of Tuberculosis.—Sacorrafos discusses the problem in the light of modern research and his own experience. Only in the case of syphilis can one speak of pathologic heredity and predisposition toward an infectious disease. Leprosy, which for centuries was considered to be an hereditary disease, is now shown to be transmissible by direct contagion only. The study of the filtrable virus in tuberculosis has renewed interest in the problem, yet the attitude of various workers in this field is conflicting. Experience with the cutireaction denotes the presence of tuberculosis in all cases with positive reaction. However, infants separated from tuberculous mothers and raised in a healthy environment did not develop tuberculosis; their cutireaction remained negative. Rare cases are known in which infants, although infected, did not show a positive reaction or the reaction was considerably weakened. This may be explained by certain phenomena of allergy. Sacorrafos sees another proof for support of his theory in the experience of native French colonial troops who were stricken with fatal acute tuberculosis on their arrival in Europe. In this instance heredity and a predisposition for the disease were excluded, as it was nonexistent in their home countries. Sacorrafos does not consider any argument valid in favor of heredity of tuberculosis and believes that in combating the disease the physician should focus his attention on the danger of contagion.

Giornale di Clinica Medica, Parma

10: 819-898 (Sept. 20) 1929

Pathogenic Potency of Brucella Abortus in Man. U. Gabbi.—p. 819.
Differentiation Between Micrococcus Melitensis and Brucella Abortus. F. Cantani.—p. 827.
Banti's Disease. R. D'Alessandro.—p. 831.
*Lead and Roentgen Rays in Treatment of Malignant Tumors. L. Feci.—p. 838.

Lead and Roentgen Rays in Treatment of Malignant Tumors.—After examining the results obtained by other authors who have used colloidal lead, associated with roentgen therapy, in the treatment of malignant tumors, and on the basis of his own personal experience, Feci concludes that the best technic consists in applying roentgen irradiation both before and after the administration of the lead. The irradiation that precedes produces within the tumor the peculiar conditions that favor a better local accumulation of the injected colloid. The irradiation that follows the administration of lead finds extraordinarily favorable conditions for the development of its destructive capacity. Then, again, the irradiation reduces notably the dose of colloidal lead required, aiding thus in avoiding the possibility of grave general toxic effects. In this combined treatment, the principal action must be attributed to the roentgen rays.

Pediatria, Naples

37: 967-1050 (Sept. 15) 1929

*Congenital Hemolytic Jaundice. P. Zappa.—p. 967.
Modifications of Glycemic Curve in Relation to Action of Thymus. G. A. Piana.—p. 1013.
Amino-Acids in Blood of Infants During Digestive Period. F. Peola.—p. 1021.
Chloroma in Infants. S. Gandolfo.—p. 1029.

Congenital Hemolytic Jaundice.—Zappa's patient was treated from the age of 7 to the age of 13 for congenital hemolytic jaundice. His development was backward and his general condition was poor. He had a mongoloid aspect and he complained of heart trouble (which might have been caused either by the coexistent anemia or by the enlarged spleen and the enlarged liver). The Wassermann and Pirquet reactions were negative. Blood transfusion and roentgen irradiation of the spleen failed. Splenectomy gave excellent results (though the patient had a pulmonary complication, from which he recovered). Twenty-five months after the operation, when at the age of 15, the general condition and the character of the patient had improved, his mongoloid aspect had disappeared and his physical development was more rapid. Splenectomy caused also the disappearance of the characteristic blood picture of congenital hemolytic jaundice; it increased the resistance of the erythrocytes, made the sedimentation time uniform, and caused the bilirubinemia to disappear.

Policlinico, Rome

36: 493-540 (Oct. 1) 1929. Medical Section

*Curability of Tuberculous Meningitis. G. Borruso.—p. 493.
Syndromes of Spina Bifida Occulta. U. Nuvoli.—p. 501.
Sacrolumbar Peripachimeningitis and Purulent Meningitis Due to Clinically Primary Sacral Osteomyelitis. G. Chiucini.—p. 514.
*Neuritis and Sciatic Neuralgia Associated with Malaria. A. Fiorentini.—p. 520.
Clinical and Therapeutic Notes on Sixty-One Cases of Tetanus. A. Fabris.—p. 527.

Curability of Tuberculous Meningitis.—Borruso reports a case of tuberculous meningitis that presented frank clinical symptoms of meningitis and, on the first lumber punctures, a clear cerebrospinal fluid with an increased percentage of albumin—Nonne, Pandy and lymphocytosis positive. On a fourth lumbar puncture, done a little more than a month from the beginning of the disease, a spinal fluid was obtained that presented a marked diminution in the percentage of albumin and moderate lymphocytosis—Nonne and Pandy still positive. A sixth (and last) lumbar puncture, done after about six months' stay in the hospital, when the patient had recovered clinically, gave a cerebrospinal fluid that was chemically and morphologically normal. The guinea-pig into which was injected the sediment obtained by centrifugation of the cerebrospinal fluid, taken when the patient presented frank meningitic symptoms, died after about five months, and at necropsy showed signs of generalized tuberculosis. Inoculation with the cerebrospinal fluid secured from the last lumbar puncture, when the patient appeared cured, was, on the contrary, negative. After about five months' stay in the hospital, the patient presented a tuberculous ostearthritis of the spinal column, which evidently was a confirmation of the previous clinical observation as to the tuberculous nature of the meningeal disorder. The patient, when examined more than a year after the beginning of the disease, was found to be in a good state of health.

Neuritis and Sciatic Neuralgia Associated with Malaria.—Fiorentini has had occasion to observe two cases of sciatic neuritis and a case of sciatic neuralgia due to malaria provoked respectively by the estivo-autumnal parasite and by the benign tertian parasite, and discusses the pathogenesis and clinical importance of the cases. He states that sometimes sciatic neuritis may be provoked by an injection of quinine in proximity to the nerve.

36: 1311-1346 (Sept. 16) 1929. Practical Section

*Plasmochin in Treatment of Quinine Hemoglobinuria. M. Torrioli.—p. 1311.
Posttraumatic Sarcoma of Humerus with Spontaneous Fracture. C. Romanini.—p. 1315.
Nitrogen Emphysatherapy in Sciatica. E. Cecchini.—p. 1318.
Treatment of Fractures of Femur by Continuous Extension. G. Petta.—p. 1322.

Plasmochin in Quinine Hemoglobinuria.—To determine the usefulness of plasmochin in the treatment of blackwater fever, Torrioli studied the effect of this preparation on the blood serum of hemoglobinuric patients. There was no doubt as to the diagnosis. The suspensions of erythrocytes which were added to these serums were made with erythrocytes derived from patients with benign tertian fever. The author's experiments were made according to Ghiron's method (*Policlinico* **33**:1 [Jan. 1] 1926; abstr. THE JOURNAL, March 20, 1926, p. 915). The author prepared two separate series of ten tubes each. In each of the ten tubes of the first series, he placed 20 drops of plasmochin solutions in concentration from 1 per cent to 0.10 per cent and 2 drops of suspensions of erythrocytes from malaria patients. Then, after five minutes' heating in the incubator at 37 C. (98.6 F.) 2 drops of blood serum from blackwater fever patients were added. The same procedure was followed in the second series of tubes, but, instead of plasmochin, quinine hydrochloride was used to test the activity of the serum.

Both series of tubes were placed in the incubator at 37 C. and hemolysis was read every ten minutes. From his results the author concludes that plasmochin is harmless in quinine hemoglobinuria when taken after the attack has subsided.

36: 1347-1382 (Sept. 23) 1929. Practical Section

Chronic Arthropathy of Spinal Column. C. Pákozdy.—p. 1347.
*Diabetes of Syphilitic Origin: Arsphenamine Therapy. A. Tomaselli. —p. 1353.
Poisoning with Nerium Oleander. G. A. Scotti.—p. 1354.

Diabetes of Syphilitic Origin: Arsphenamine Therapy. —Tomaselli's patient, aged 41, declared himself as normal in every respect. He had healthy children but for several months he had been impotent. The examination of his urine showed 30 Gm. of dextrose per thousand cubic centimeters. Antidiabetic treatment failed. While the author was planning the administration of insulin, the patient suddenly had formication in half of his body, as well as some facial phenomena. The Wassermann reaction was strongly positive. The patient admitted that ten years before he had had syphilis for which he had received treatment and stated that he believed himself cured. He received arsphenamine for three months and both the dextrose in the urine and the sexual disturbance disappeared.

Revista Médica del Rosario, Rosario de Santa Fe

19: 255-320 (June) 1929. Partial Index

*Renal Function Test with Sodium Thiosulphate. J. Silberstein.—p. 265.
*Influence of Suprarenal on Pancreatic Diabetes. E. S. Turcatti.—p. 269.

Renal Function Test with Sodium Thiosulphate.—Silberstein compares the results he obtained in determining renal insufficiency, by means of phenolsulphonphthalein, with those obtained by the intravenous injection of 10 cc. of a seminormal solution of sodium thiosulphate. He made the tests on three groups of persons: (1) normal persons, as controls, (2) patients with manifest diseases of the kidneys and (3) patients with heart, liver or other diseases. The mean indexes when sodium thiosulphate was used were 29.9, 16.85 and 19.72, respectively, for each group. The mean indexes of the phenolsulphonphthalein elimination, taken seventy minutes after the injection, were 72.5, 50 and 55 per cent, respectively. The author says that in all patients with manifest renal lesions, the data from the sodium thiosulphate test were more exact than those obtained with the phenolsulphonphthalein test. Extrarenal factors did not affect the sodium thiosulphate test. This test, the author believes, deserves a place among the functional tests of the kidneys.

Influence of Suprarenal on Pancreatic Diabetes.—From his experiments in animals, made to determine the reciprocal influence of the suprarenal and of the pancreas on the blood sugar level, Turcatti concludes that: Total suprarenalectomy, made simultaneously or before pancreatectomy, prevents the development of diabetes. Denervation of the suprarenal and the removal of the medulla of the suprarenal do not prevent the development of diabetes. These effects are different and independent of those caused by the absence of epinephrine, because denervation of the suprarenal and even suprarenalectomy does not suppress all the chromaffin bodies. The suprarenal regulates the carbohydrate metabolism. When its medulla has been removed, hyperglycemia may be produced by pancreatectomy; but it is impossible to produce hyperglycemia if the cortex of the suprarenal has been removed. The author considers that the cortex of the suprarenal has a vagotonic function. Through the vagus nerve it exerts an influence on the metabolism.

Archiv für Kinderheilkunde, Stuttgart

88: 81-240 (Aug. 20) 1929

*Diagnosis of Pylorospasm. B. Kemkes.—p. 81.
Negative Phase Following Injection of Small Doses of Diphtheria Toxin. J. Siegl.—p. 95.
*Infantile Dementia. H. Jancke.—p. 114.
Hereditary Predisposition to Gout. J. Brock.—p. 128.
*Relation Between Dentition and Fever. E. Helmerich.—p. 139.
*Treatment of Eczema with Hydrochloric Acid Milk. T. Sandels.—p. 146.
Spontaneous Cure in Diphtheria. J. Siegl.—p. 154.
Bacteriologic Examination in Scarlet Fever. H. Happe and H. Thiele.—p. 175.
Method for Conducting Prolonged Study of Mineral and Nitrogen Metabolism in Nurslings. E. Rominger, H. Fasold and H. Meyer.—p. 179.

Diagnosis of Pylorospasm.—Kemkes emphasizes the importance of considering duodenal stenosis in the differential diagnosis in pylorospasm. He discusses two forms of duodenal stenosis, the infrapapillary and the suprapapillary. In the first form the diagnosis can usually be made on the basis of bile in the gastric contents and vomitus. In the second form the diagnosis is easily made on the basis of the roentgen changes; the stomach is usually greatly dilated and two air bubbles are seen, a large one in the stomach and a small one in the duodenum.

Infantile Dementia.—According to Jancke, only thirteen cases of infantile dementia have been reported. Almost all of them occurred in Austria and Russia. To these cases he adds two that he observed personally, one in a girl aged 2 years and 2 months and one in a girl aged 3 years and 5 months. In the first case the condition appeared when the girl was only 1 year and 8 months of age, the earliest appearance of infantile dementia thus far reported. The author believes that infantile dementia is caused by a diffuse organic injury of the brain which leads to a general lowering of the mental processes but is without marked influence on the bodily processes.

Relation Between Dentition and Fever.—From a study of the case reports taken at the pediatric clinic of the University of Würzburg during the past twelve years, Helmerich concludes that there is not an etiologic relation between dentition and fever. Because of the frequency of the two conditions in infants, their coincidental concomitance is common but the absence of fever in many carefully observed teething infants proves that the relation between the two conditions is not etiologic.

Treatment of Eczema with Hydrochloric Acid Milk.—In functional skin tests in 160 infants and children, Sandels found that 50 per cent of all children between the third month and the eighth year of life show a hyperirritability of the skin to a 4 per cent solution of formaldehyde. On a diet containing milk acidified with hydrochloric acid (Scheer) this hypersensitivity of the skin disappeared in twenty-five out of twenty-six cases and did not return when the administration of the acidified milk was discontinued. The author believes that these observations explain the efficacy of milk acidified with hydrochloric acid in the treatment of eczema. In experiments with less readily oxidizable organic acids, as tartaric acid and alpha-isohydroxybutyric acid, the desensitization was less marked, corresponding to the less satisfactory results obtained with these acids in the treatment of eczema.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

88: 345-510 (Sept. 18) 1929

*Metastasis of Hypernephroma in Cerebrum. A. W. Gerwer.—p. 345.
Liquorrhea Nasalis in Tumor of Pituitary Body. A. P. Friedmann.—p. 358.
Liberation from a Complex, by Reproduction of Event Causing It. N. Krestnikoff.—p. 369.
Muscular Atrophy Caused by Cerebral Lesions. J. Kiss.—p. 411.
Blood Pressure and Shape of Heart in Senile and Arteriosclerotic Psychosis. E. Jacobi.—p. 425.
Development of Delusional Insanity. E. Kahn.—p. 435.
Diffuse Symmetrical Scleroderma. H. Zehrer.—p. 455.

Metastasis of Hypernephroma in Cerebrum.—On the basis of his experience and a review of the literature, Gerwer discusses the etiology of these tumors. The symptoms of the disease were similar in two patients who came under his observation. In the first, a man aged 62, they became evident one month previous to admission to the clinic; in the second, a woman aged 50, the symptoms occurred ten days before. They consisted of headache, gradual weakening of the muscles of the extremities, hemiplegia, the occurrence of periods of hallucinations, and mental disorder. Increasing paralysis led to the fatal outcome in a few weeks, through heart failure. Necropsy in the first case revealed the presence of a small nodule in the right kidney. The suprarenals were enlarged and contained a yellowish, tumor-like mass. In the right lung, also, yellow nodules were present. No other organs appeared involved. In the brain, however, six encapsulated dark nodules containing infiltrations of a white substance were noted. They were equally distributed in the two hemispheres. In the second patient, necropsy showed that the right kidney contained a small tumor; the left kidney was enlarged to about five times its normal size and was infiltrated throughout with newly formed tissue. Both suprarenals were enlarged, especially the right

one. No tumors were found in the other organs, but atrophy of the liver, acute enlargement of the spleen and seropurulent pericarditis were noted. In the right cerebral hemisphere a small tumor was found. Microscopic examination of the brain tumors in both patients revealed that they were metastases of the suprarenal tumors, as they presented the characteristic cells and tubular structure of this organ. Gerwer points to the occurrence in both cases of similar mental disturbances and he concludes that, in consideration of the small size of the tumors, these disorders could not be caused by changes of pressure or inhibition of the intracranial blood circulation. According to Gerwer, the symptoms are due rather to the toxic effect of the metastasis. He describes one other case of metastasis of a hypernephroma occurring within the spinal column and tissues of the neck.

Deutsches Archiv für klinische Medizin, Leipzig

165: 1-128 (Sept.) 1929

*Changes in Size of Heart in Treatment of Obesity. W. Scharpff.—p. 1.
Encephalography by Means of Suboccipital Puncture. R. Schaefer.—p. 23.
"Cerebral Polycythemia." H. Günther.—p. 41.
*Primary Multiple Myelomas. W. Hallermann.—p. 57.
*Uric Acid Content of Blood as Index of Functioning of Kidneys. P. Müller and A. Krumeich.—p. 96.
Lymphopenia in Diseases of Lymphatic System. M. Aresu.—p. 106.
*Differential Diagnosis in Typhoid. H. Weiss.—p. 116.
*Intravenous Injection of Carbon in Pulmonary Tuberculosis. Bingel.—p. 123.

Changes in Size of Heart in Treatment of Obesity.—Scharpff reports the results of a roentgen study of the size of the heart in fifty-one obese persons before and after a reducing cure. With the exception of the patients who had a definitely small heart before the reducing cure was begun, a diminution in the size of the heart in patients with a normal cardiovascular system was demonstrated following a loss of weight of 7 Kg. (15⅝ pounds). In patients with a normal myocardium and high blood pressure, a marked diminution in the size of the heart was noted following loss of weight; in these patients, however, the reduction in the blood pressure was of greater influence than the reduction in the body weight. In patients with pathologic changes in the myocardium and a normal blood pressure, a loss of body weight was not followed by a decrease in the size of the heart. In patients with pathologic changes in the myocardium accompanied by an increased blood pressure, a reduction in both the body weight and the blood pressure was followed by a decrease in the size of the heart. The author believes that the decrease in the size of the heart of obese persons following reducing cures is caused not by a decrease in the myocardium or the fat of the heart but by a decrease in the systolic residue as a result of which compensatory dilatation of the heart is caused to disappear. Contrary to what is true in obese adults, marked dilatation of the heart is rare in obese young persons. Apparently the functional capacity of the myocardium is greater in young persons than in adults. The author emphasizes the fact that every dilatation of the heart, even when it is compensatory, should be considered as pathologic. Therefore, reducing cures are indicated not only for decreasing the body weight but primarily for increasing the functional capacity of the heart. In a great many more patients than was formerly considered to be the case it is possible to decrease a dilatation of the heart or make it disappear completely, thus placing the injured heart in a condition to respond to unusual demands.

Primary Multiple Myelomas.—Hallermann reports eleven cases of multiple myeloma. From a study of these cases he concludes that, contrary to the general opinion, the destruction of bone caused by the growth of myelomas occurs as the result of osteoclastic lacunar resorption.

Value of Uric Acid Content of Blood as Index of Functioning of Kidneys.—Müller and Krumeich state that the uric acid content of the blood is not a particularly sensitive index of the functioning of the kidney because it is increased in cases of arteriosclerosis not accompanied by disturbances of the kidneys.

Value of Tests in Differential Diagnosis in Typhoid.—According to Weiss the atropine test, erythrocyte sedimentation rate and blood platelet determinations are not of value in the differential diagnosis in typhoid.

Intracutaneous Injection of Carbon in Pulmonary Tuberculosis.—Bingel reports a case of sudden death in a woman, aged 21, with pulmonary tuberculosis, following the intravenous injection of 10 cc. of a 5 per cent suspension of pulverized animal charcoal. Microscopic examination of the brain revealed the presence in numerous small vessels of fine masses of carbon.

Deutsche medizinische Wochenschrift, Berlin

55: 1575-1618 (Sept. 20) 1929

Diseases of Metabolism: Treatment of Obesity. P. F. Richter.—p. 1575.
Prophylaxis of Rickets. R. Degkwitz.—p. 1578.
Diagnosis of Displacements of Uterus and of Other Genitalia. Benthin. —p. 1585. C'cn.
Simple Method for Determination of Blood Sugar for Use by General Practitioner. E. Kestermann.—p. 1586.
*Urea Concentration Test for Determination of Functioning of Kidneys. H. Steinitz.—p. 1587.
Constitutional Hypotonia: Its Significance for Differential Diagnosis of Tuberculosis. F. Junker.—p. 1589.
Dermatosis Following Ingestion of Cosmetic Pills Containing Arsenic. C. Stern.—p. 1592.
New Finger Splint. B. Kienle.—p. 1593.
Occupations for Patients and for Convalescents. A. Wiest.—p. 1596. C'cn.

Urea Concentration Test for Determination of Functioning of Kidneys.—Steinitz reports his experiences with the Maclean-de Wesselow test. Following a review of the literature on this urea concentration test he describes the technic. On the evening preceding the test the patient receives the usual preparatory diet, which is employed in nearly all functional tests of the kidney. The next morning, after discharge of the night urine, the patient receives 15 Gm. of urea in 200 cc. of weak, black coffee. The patient has to urinate hourly thereafter. In persons who are free from renal diseases the urea concentration reaches 2 per cent or more during the second hour. The author further reports his experiences in ninety patients with disturbances of the kidney. In some of these patients the test was repeated. In order to avoid mistakes in estimating the result of this tolerance test it should be kept in mind that the urea often leads to diuresis. Whenever the amount of urine in the second hour exceeds 100 cc., the urea concentration may be less than 2 per cent. In these instances the urine eliminated during the third hour should likewise be tested. The urea concentration test is valuable in the prognosis and in deciding the therapeutic method, especially in surgical urologic diseases. The author asserts that the decrease in the postoperative mortality in uremia is the result not only of improved surgical methods but also of the fact that indications or contraindications for operative treatment can be more precisely determined with the aid of functional tests. The urea concentration test is simple and can be performed in ambulatory treatment. It indicates even slight disturbances.

Jahrbuch für Kinderheilkunde, Berlin

125: 1-126 (Sept.) 1929

*Serum Treatment in Scarlet Fever. E. Gabriel.—p. 1.
Pathogenesis of Partial Gigantism. O. D. Kitaigorodskaja.—p. 38.
*Peculiar Bone Disease in Child. H. Globig.—p. 90.

Value of Serum Treatment in Scarlet Fever.—Gabriel emphasizes the fact that a definite answer to the question of the value of serum treatment in scarlet fever can be given only on the basis of a comparative study of treated and nontreated patients in the same epidemic. He states that in a review of the literature available to him he was unable to find the report of such a study and attributes its absence to a fear of censure for not using a method of treatment that has been described as highly efficacious. His conclusions are based on a study of scarlet fever in 420 children. Regardless of the severity of the condition in the individual case, only every other patient was given serum. In the treatment of the first patients a serum obtained from horses by immunization with hemolytic streptococci from patients with severe scarlet fever was used. In the first patients 25 cc. of the serum was given intravenously. Later 10 cc. of concentrated scarlet fever serum was used; this contains chiefly the protein fraction to which the antitoxic component is bound. The unnecessary and frequently harmful protein fractions of the serum which are concerned in the production of hypersensitivity are absent in the concentrated

serum. By concentration, the antitoxin content of the serum is increased but the permissible protein content of 12 per cent is not exceeded. The action of concentrated serum is three or four times as great as the action of ordinary scarlet fever antitoxic serum. Therefore in the administration of large doses it is necessary to inject only a relatively small quantity of concentrated serum, thus minimizing the painfulness of the injection. In the author's experience the incidence of serum sickness was not decreased much by the use of concentrated serum. If an improvement in the condition of the patient was not noted within twenty-four hours of the first injection, the same amount of serum was again injected. The author states that, although the number of patients observed was too small to make the results of the study conclusive, they at least indicated that the enthusiasm of some investigators with regard to the efficacy of antitoxic serum in the treatment of scarlet fever is unjustified in spite of the fact that it seems to shorten the duration of the fever in the acute stage and appears to be of prophylactic value. Complications occurred in 71 per cent of the patients treated without serum, whereas they occurred in only 60.5 per cent of the patients treated with serum; in an additional 8.5 per cent of the latter patients, however, there occurred definite serum sickness with fever and joint involvement, thus bringing the total percentage of cases of complications in these patients to 69.

Peculiar Bone Disease in Child.—Globig reports the development over a period of one year of four soft fluctuating tumors of the cranium and two similar tumors of the pelvis in a child, aged 3 years. Five successive operations were performed in which specimens were removed for microscopic examination and the tumors were curetted. Several pathologists examined the operative specimens but were unable to make a definite diagnosis of the condition. The author presents his reasons for believing that it was not tuberculosis, syphilis, multiple myeloma or chloroma.

Klinische Wochenschrift, Berlin

8: 1745-1792 (Sept. 17) 1929

Lipoid Metabolism During Childhood. H. Knauer.—p. 1745.
Water Content of Skin in Persons with Obesity: Investigations with McClure-Aldrich Test. G. Recht.—p. 1748.
Pharmacologic Investigations of "Kombucha" and Its Action in Viosterol Poisoning. S. Hermann.—p. 1752.
Resorption Capacity of Intestinal Wall for Hydrogen Ions. K. Scheer.—p. 1757.
C. and O. Vogt's Theory on Delimitation of Sensory Areas in Brain: Its Significance for Psychiatry. P. Schröder.—p. 1759.
Hereditary Factors in Orthoglycemic Glycosuria. U. Hjärne.—p. 1762.
Insulin and Dextrose Tolerance Tests in Diabetic Patients with Heart Disease. H. Taterka.—p. 1763.
*Effect of Carbon Dioxide Inhalations on Hydrogen Ion Concentration in Blood of Patients with Cancer. Schreus.—p. 1764.
Presence of Female Sex Hormone and of Hormone of Anterior Lobe of Hypophysis in Blood and in Urine of the New-Born. R. Brühl.—p. 1766.
Processes in Gastro-Intestinal Tract Following Peroral Administration of Dextrose. F. Holtz.—p. 1768.
Influence of Cerebrum on Sugar Content of Blood. I. Daniel and M. Maxim.—p. 1769.

Effect of Carbon Dioxide Inhalations on Hydrogen Ion Concentration in Blood of Patients with Cancer.—Schreus asserts that an increased hydrogen ion concentration in the blood promotes the growth of cancer. He made tests to determine the acid-base equilibrium in the blood of patients with cancer. A tabular report shows that in nearly all cases the hydrogen ion concentration was considerably above the normal, while the alkali reserve was either normal or only slightly increased. In order to determine the relation between the hydrogen ion concentration and the alkali reserve and to find a therapeutic method, the author made experiments with an acid producing diet and with the administration of ammonium chloride. It was found that the alkali reserve could be reduced. However, the hydrogen ion-concentration could not be influenced in this manner. In searching for other means the author discovered that, by increasing the carbon dioxide content of the alveolar air, the hydrogen ion concentration of the blood could be reduced. In order to effect this, the patients breathe air with an increased content of carbon dioxide. This method requires a careful technic, and for its improvement additional experiments will be necessary. The author states that the results obtained so far justify further investigations.

8: 1793-1840 (Sept. 24) 1929

Significance of Term "Symptomless Infection." F. Breinl.—p. 1793.
Significance of Hydrogen Ion Concentration in Urine. F. Mainzer.—p. 1794.
*Investigations on Tropical Climate. O. Kestner and W. Borchardt.—p. 1796.
Action of Brain Antiserums on Brain of Rabbits Following Subdural Injection. F. Plaut.—p. 1801.
Local and Paravertebral Anesthesia as Aids in Differential Diagnosis. W. K. Fränkel.—p. 1803.
Function of Sympathetic Centers in Midbrain. L. Hess and J. Faltitschek.—p. 1806.
*Investigations on Balint's Phenomenon. S. A. Westra.—p. 1808.
Relation Between Stage of Development of Lymphatic Tissues and Absolute Number of Lymphocytes: Their Dependence on Condition of Small Vessels. H. Schwanen.—p. 1811.
*Experiences with Meinicke Clarification Reaction. H. Beyreuther.—p. 1815.
Occurrence of Oxycholesterol in Organism. I. Lifschütz.—p. 1816.
Demonstration of Increased Permeability of Capillaries in Allergic Purpura and in Other Diseases. F. Basch.—p. 1817.
Influence of Acidosis on Allergy to Tuberculin. K. Choremis.—p. 1817.
Clinical Aspects and Treatment of Pellagra. M. Rachmilewitz.—p. 1819.

Investigations on Tropical Climate.—Kestner and Borchardt point out that medical science has made great progress in the prevention and treatment of tropical diseases. In recent times, interest has been stimulated in the effects of the tropical climate on the natives and especially on persons from northern regions. During a sojourn in Cameroon, the authors investigated the climatic conditions. They studied the ultraviolet radiation, the temperature, the perspiration, the pigmentation of the skin as protection against heat, and the results of changed blood conditions. Their observations are thus summed up: In the lowlands of Cameroon the ultraviolet radiation is not intense. Pigmentation of the skin is an important protection against the heat, especially for the white population. One should strive to acquire it by reasonable exposure to the sun. In persons living in tropical lowlands the skin has a stronger perfusion with blood and an increased temperature. This blood is drawn away from the internal organs, especially from the organs of digestion, and the result is reduced activity in these organs, a decrease in the appetite and a lessened secretion in the digestive tract. The perspiration reduces the organism's supply of mineral substances. Consequently they have to be replaced in the food. The process of perspiration in the colored native differs somewhat from the one in the white person. The main dissimilarity lies in the fact that in the colored native the sebaceous glands have a more marked secretion. In the white person the skin is almost saturated with the perspiration, while in the colored native the sweat gathers in drops on the outside and does not affect the skin. When the white person greases his skin he is protected like the native. Acclimatization to the tropical climate is effected by reasonable exposure to the sun by acquiring pigmentation and by letting the perspiration evaporate.

Investigations on Balint's Phenomenon (Increased Acidity in Tissues of Patients with Peptic Ulcer).—Westra directs attention to Balint's hypothesis, according to which the tissues of patients with peptic ulcer have an increased acidity. The results of the author's investigations on this problem are summed up as follows: Balint's phenomenon is demonstrable in certain persons with peptic ulcer, but it is not present in all cases. It is limited to changes in the acidity of the urine and it is not caused by a more rapid disappearance of the injected alkali from the blood. An infusion of sodium bicarbonate cannot be considered an alkali tolerance test for the tissues. An infusion of sodium bicarbonate influences, by means of a decrease in the calcium, the autonomous nervous system, by stimulating the vagus. Balint's hypothesis of tissue acidosis in persons with peptic ulcer is not confirmed. Balint's phenomenon may be explained by the vagotonia in patients with peptic ulcer.

Experiences with Meinicke Clarification Reaction.—Beyreuther reports the results of tests on 1,000 serums from patients with various diseases. The majority of these patients came to the clinic on account of internal disturbances or because of nervous disorders. A small number had skin or venereal diseases. The serums were subjected to four different tests: the Wassermann, Sachs-Georgi, Meinicke clarification and Meinicke turbidity. Nine hundred and twenty serums gave negative reactions. It was found that with regard to specificity the Meinicke clarification reaction was superior to the Wasser-

mann reaction. The author asserts that the Meinicke clarification reaction is simple, is inexpensive and requires little time. He considers it a valuable aid in the serodiagnosis of syphilis and recommends its application.

Münchener medizinische Wochenschrift, Munich

76: 1579-1622 (Sept. 20) 1929

Peroral Administration of Insulin. R. Stephan.—p. 1579.
*Peroral Administration of Insulin in Diabetic Children. M. Ottow.—p. 1584.
*Secondary Effects of Insulin. P. Bonem.—p. 1585.
Cesarean Section in Modern Obstetrics. R. Hornung.—p. 1586.
Dependence of Radical Operation in Gastric and Intestinal Cancers on Their Duration. H. G. Zwerg.—p. 1590.
Value of and Indications for Braun's Splanchnic Anesthesia. E. Martin.—p. 1591.
Necessity of Thorough Examination for Early Diagnosis of Cancer of Female Genitalia. P. Gornick.—p. 1592.
Infection of Meninges Following Spinal Puncture. L. Drüner.—p. 1594.
Value of Breast Pump Operated by Jet of Water. L. Moll.—p. 1594.
Etymology of Term "Cesarean Section": Remarks Concerning Term "Cervical Cesarean Section." H. Martius and L. Ramsauer.—p. 1594.
Combat Against Tuberculosis in Italy. O. Burkard.—p. 1597.
Simple Methods for Nonsurgical Correction of Deformities After Fractures and After Osteotomy. P. Pitzen.—p. 1599. C'cn.

Peroral Administration of Insulin in Diabetic Children.—Ottow points out that, in pediatrics, insulin injection therapy is often difficult. After the child leaves the clinic, when the further treatment is left to the mother, the injections are often neglected either out of pity or out of carelessness. The promising results of recent experiments with regard to the peroral administration of insulin came to the author's attention, and consequently this method was employed in several diabetic children. On the basis of her experiences she comes to the conclusion that insulin is effective when administered orally, although it works more slowly than when injected subcutaneously. Worthy of note is the fact that the sugar in the urine disappears before a decrease in the sugar content of the blood occurs. Harmful results were not observed. The author had the impression that the peroral administration effected an improvement in the tolerance for carbohydrates as a result of regeneration of the islands of Langerhans.

Secondary Effects of Insulin.—Bonem reports the case of a woman who had an idiosyncrasy for insulin. For thirteen days the patient had received insulin injections, and during this time untoward effects had not been noted. Then the insulin injections were discontinued for one day. On the following day an urticaria developed, which became more severe after each injection. When a different brand of insulin was used, the patient collapsed. She was pale, the pulse was thready, diarrhea developed, and the tongue, the mucous membrane of the oral cavity and the glottis became edematous. The patient could not swallow. Injection of a solution of dextrose did not bring betterment. Following the intravenous injection of 10 cc. of normal calcium gluconate, the patient's condition improved. The author observed similar manifestations of the hypersusceptibility to insulin in two nondiabetic persons. They were asthenic patients who received insulin injections in combination with a forced alimentation treatment. The author assumes that insulin preparations probably contain a substance that causes such effects. These allergic shocks hinder the otherwise favorable results of insulin therapy.

76: 1623-1664 (Sept. 27) 1929

Europe and the Yellow Fever Problem. W. H. Hoffmann.—p. 1623.
Treatment of Sterility by Means of Insufflation of Uterine Tubes. A. Mayer.—p. 1627.
Vasectomy in Hypertrophy of Prostate. K. Hutter.—p. 1629.
Improved Examining and Operating Chair for Use in Urologic Diseases. P. Mulzer.—p. 1631.
Significance of Fluctuations in Antitoxin Content of Blood for Predisposition to Diphtheria. J. Siegl.—p. 1632.
Pathogenesis of Hypoglycemic Syndrome in Diabetic Patients Receiving Insulin Injections. Y. Hattori.—p. 1634.
Treatment of Traumatic Ungual Hematoma. H. Beer.—p. 1635.
Choice of Medicament for Prophylaxis of Gonorrhea in the New-Born. G. Schäfer.—p. 1635.
Treatment of Hemorrhoids. H. Unger.—p. 1637.
*Reasons Why Fractures of Vertebrae are Diagnosed as Rheumatism of Musculature of Spine. H. J. Lauber and C. Ramm.—p. 1638.
Fundamental Factors to be Considered in Operation on the Kidney. Pflaumer.—p. 1640.
Diagnostic Significance of Bronchography. K. Baatz.—p. 1644.
Indications for Artificial Pneumothorax in Pulmonary Tuberculosis. Schottmüller.—p. 1646.
Relative Value of Various Types of Breast Pumps. K. Scheer.—p. 1648.

Reasons Why Fractures of Vertebrae are Diagnosed as Rheumatism of Musculature of Spine.—In reviewing several cases of fractures of vertebrae, Lauber and Ramm found that in many instances the fracture had been diagnosed as rheumatism and had been treated accordingly. Of the factors that may be responsible for the incorrect diagnosis in such cases the authors name the following: The sensibility of the patient may be reduced as a result of an organic nervous disturbance. In many instances the pains are slight, so that fracture of a vertebra is not thought of at all. In many cases, even careful roentgen examination does not reveal a fracture. Fractures that are caused by muscular traction do not receive sufficient consideration. Four cases, which are described by the authors, indicate the great significance of careful roentgen examination. They show that a roentgenogram that is taken from the front or from the back may not reveal a fracture, whereas a roentgenogram taken from the side plainly shows the fracture. The authors state that if the first roentgen examination does not reveal a fracture but the pains continue, the examination should be repeated after certain intervals. In some instances the fracture can be demonstrated only following the formation of the callus.

Wiener klinische Wochenschrift, Vienna

42: 1245-1276 (Sept. 26) 1929

*Investigations on Cancer Lysins. A. Edelmann, L. Schönbauer and W. Schloss.—p. 1245.
Rôle of Heredity in Pathogenesis of Schizophrenia: Observations on Uniovular Twins. J. Lange.—p. 1247. C'cn.
*Clinical Aspects of Digestive Disturbances of Vascular Origin. H. Kahler.—p. 1250.
Phosphaturia, Rickets and Tetany as Manifestations of Insufficiency of Brain, Especially of Its Sympathetic Functions. J. Aiginger.—p. 1252. C'cn.
Smallpox Vaccination as Method of Interference Therapy. N. Blatt.—p. 1255.
Methods for Determination of Changes in Nonspecific Allergic Condition. K. G. Stenzel.—p. 1259.
Manometer Reading in Artificial Pneumothorax Combined with Phrenic Exeresis. H. Maendl.—p. 1261.
*Auricular Fibrillation Cured by Strumectomy. A. Sachs.—p. 1261.
Symptoms, Diagnosis and Treatment of Cancer of Stomach. W. Zweig.—p. 1263.
*Surgical and Physical Therapy of Contractures. A. Saxl.—p. 1266.
Difficulties in Determination of Physique and Development of Children. W. Kornfeld.—p. 1267.
Methods for Prevention of Recurrence Following Surgical Removal of Malignant Tumors. F. Mandl.—p. 1269.

Investigations on Cancer Lysins.—Edelmann et al. attempted to prepare a substance having a lytic effect on cancer cells. They report the results of experiments with bouillon autolysates from cancer and with serums from healthy persons. The results of their investigations are summed up as follows: Bouillon autolysates from carcinomas have a lytic effect on cancer cells. This lytic property is not constant. Up to the second month following the preparation of the lysate, its virulence increases. Then the lytic action remains the same for from two to four weeks, and after that it decreases. The cytolytic power of an autolysate is strongest if it acts on homologous tumor cells. Serums from persons who are free from cancer exert a lytic action on about 60 per cent of the cancer cells. At the stage when the autolysate has the maximum virulence, its lytic power is greater than that of normal serums. The lytic power of the autolysate is greater on heterologous cancer cells in the majority of cases, on homologous cancer cells in all instances. In control tests with physiologic solution of sodium chloride and with bouillon, cytolysis did not occur. The authors consider these experiments only preparatory tests. Further investigations will be necessary to determine the nature of the lytic agent.

Clinical Aspects and Differential Diagnosis in Digestive Disturbances of Vascular Origin.—Kahler asserts that symptoms in the digestive organs are often caused by changes in the vessels, such as contraction, dilatation or laceration. First he describes symptoms that are caused by a contraction of the arteries in the splanchnic region. The actual causes of these arterial disturbances may be arteriosclerosis, hypertension, syphilis or congenital hypoplasia of the splanchnic vessels. The symptoms of these conditions often simulate ileus or peritonitis. The differential diagnosis requires careful observation. Sclerosis of the arteries of the stomach may simulate gastric ulcer or

cancer. Periarteritis nodosa often commences with abdominal pains. This circumstance and the development of an exanthem may lead to the diagnosis of typhoid, or the symptoms may be mistaken for those of cholelithiasis, peritonitis or icterus gravis. The author further discusses the clinical aspects and the differential diagnosis in disturbances that are caused by dilatation of arteries and by contracture or dilatation of veins.

Auricular Fibrillation Cured by Strumectomy.—Sachs reports the case of a woman with hyperthyreosis. At first she had occasional attacks of auricular fibrillation with tachycardia. Later this condition became constant. The patient developed exophthalmic goiter and decompensation of the heart. Swelling of the liver, ascites and edema were also noted. By means of medicaments the pulse rate was reduced and the edema gradually decreased. However, the auricular fibrillation could not be influenced by internal therapy. After the patient's general condition had somewhat improved, a strumectomy was performed. After the operation, the heart had a normal rhythm. Then followed another attack of fibrillation, but now it was possible to counteract it so that no other relapses occurred. During the last nine months the patient has required no further treatment, and she is free from disturbances.

Surgical and Physical Therapy of Contractures.—In discussing the treatment of contractures, Saxl differentiates between the contractures which develop in the course of inflammatory processes of the joints, and those that are not caused by an arthritis. In the latter instances only the contracture itself has to be considered. However, if an arthritis is the underlying cause of the contracture, it has to be taken into account, whether the inflammatory process is in the acute, in the subacute or in the chronic stage. The author enumerates the various methods that may be employed in the treatment of contractures. The operative methods are: redressment, osteotomy, resection, tenotomy and transplantation of a tendon. Conservative methods that have proved helpful are: balneotherapy and hydrotherapy; also application of heat, electricity, roentgen rays, massage and therapeutic gymnastics. The operative treatments are usually employed to influence the contracture itself, whereas the conservative methods are applied to counteract the disease which causes the contracture. The author then specifies the methods that should be employed in certain types of contractures. He describes the treatment of contractures that develop in osteomyelitis, in gonorrhea, in tuberculosis, in rheumatic arthritis and in paralysis. Because the therapy of contractures is often extremely difficult, the author stresses the fact that efforts should be made to prevent their development.

Wiener medizinische Wochenschrift, Vienna

79: 1249-1280 (Sept. 28) 1929

Heredity in Mental Diseases. N. Toporkow and W. W. Schostakowitsch. —p. 1251.
*Significance of Etiology in Diagnosis of Sciatica: Treatment of Sciatica. F. Hiller.—p. 1255.
Symptomatology of Muscle Tumors of Small Intestine. H. Steindl.—p. 1256.
Surgical Therapy of Puerperal Fever. J. Amreich.—p. 1262. C'cn.
Development of Therapy with Nonspecific Proteins. H. B. Kaldori.—p. 1274.
Experiences of General Practitioner with Gerson-Sauerbruch's Dietary Treatment for Tuberculosis. M. Steiner.—p. 1275.

Significance of Etiology in Diagnosis of Sciatica: Treatment of Sciatica.—Hiller points out that the investigation of the causes of symptoms is of greatest significance not only for the diagnosis but particularly for the treatment. In a disease such as sciatica, which is not always characterized by the same typical symptoms, a knowledge of the etiology is necessary for an effective therapy. The author asserts that frequently a pain in the sciatic nerve is a symptom of some other disease. In one patient, with pains in the sciatic nerve, a careful clinical examination revealed that the uric acid content of the blood was 7.5 mg. In another patient the anamnesis revealed that he was an alcohol addict. A third individual remembered an acute attack of appendicitis and on operation a chronic encapsuled appendicitis was found. After the operation, the pain in the sciatic nerve disappeared completely. In other instances the author detected gonorrheal changes of the adnexa, the seminal vesicle or the epididymis. Pus in the tonsils or at the roots of the teeth was found in other patients. Tuberculous arthritis of the hip joint, arthritic processes of the pelvis or of the vertebral column, tumors of the vertebrae, varicose veins and thrombosis are also often detected in persons with sciatica. The author stresses the fact that the neurologist should have a thorough knowledge of internal medicine. In discussing the therapy of sciatica he states that cold showers with subsequent massage often give better results than hot applications or hot baths. The patient usually feels more comfortable when he sleeps in a half sitting position. If medicaments are necessary, soporifics are better than either antipyretics or morphine preparations. Parenteral protein therapy and epidural injections of hypotonic solution of sodium chloride often give good results. Alcohol injections into the nerve, however, are not advisable. In patients with postural anomalies, the pain in the sciatic nerve is sometimes successfully counteracted by orthopedic treatment.

Zeitschrift für Tuberkulose, Leipzig

54: 289-384 (Aug.) 1929

*Treatment of Tuberculosis of Lungs and Larynx with Salts of Heavy Metals. H. Jessen and R. Griesbach.—p. 289.
Optimal Duration of Artificial Pneumothorax in Early Pulmonary Tuberculosis. H. Rubinstein.—p. 303.
Intestinal Ptosis in Tuberculous Patients. J. Gwerder and L. Kalmár. —p. 314.
*Treatment of Tuberculosis in Sanatoriums at Medium Altitudes. A. Baer. —p. 317.
*Bilirubin Content of Blood in Tuberculosis. F. Warnecke.—p. 321.
Besredka's Complement Fixation Reaction for Tuberculosis. H. Schulte-Tigges.—p. 327.
Demonstration of Tubercle Bacilli in Sputum. A. Osol.—p. 332.

Treatment of Tuberculosis of Lungs and Larynx with Salts of Heavy Metals.—On the basis of their observations in the treatment of 164 patients with tuberculosis of the lungs and larynx by means of various salts of heavy metals, Jessen and Griesbach conclude that salts of heavy metals do not have a demonstrable specific bactericidal action on the tubercle bacillus. A specific affinity of the salts of heavy metals for tuberculous tissue has not been demonstrated. Their action is unspecific and represents a form of shock therapy. Treatment with salts of heavy metals is indicated in cases in which the spontaneous defense powers can be increased by shock therapy. Intestinal tuberculosis should still be regarded as a contraindication for this form of treatment. In conclusion the authors state that on the basis of their study they are convinced that the goal of a therapia magna sterilisans is not reached in the treatment of tuberculosis with salts of heavy metals.

Treatment of Tuberculosis in Sanatoriums at Medium Altitudes.—Baer presents arguments in support of his contention that the results obtained in the treatment of tuberculosis in sanatoriums at high altitudes are not better than the results obtained in sanatoriums at medium altitudes.

Bilirubin Content of Blood in Tuberculosis.—Warnecke reports the results he obtained in more than 200 bilirubin determinations that he made on 134 different serums. He states that in acute, moderately extensive unilateral pulmonary tuberculosis, even when accompanied by fever, the bilirubin content of the blood is normal. In severe extensive tuberculosis of both lungs, on the contrary, the bilirubin content of the blood serum is decreased.

Nederlandsch Maandschrift voor Geneeskunde, Leyden

16: 65-111, 1929

*Rôle of Secondary Infection in Tuberculosis Problem. J. R. F. Rassers. —p. 65.
Psychic Treatment of Sexual Perversions. E. A. D. E. Carp.—p. 91.

Secondary Infection in Tuberculosis.—Rassers indorses the view that when tuberculous patients are first admitted to tuberculosis hospitals or sanatoriums they must be kept separate from the other patients for a time. Especially patients with a mixed infection must be kept separate from those that present only a purely tuberculous disorder. To make such a separation effective, an institution must be provided with adequate personnel and equipment; more particularly, there must be a sufficient number of physicians for the bacteriologic examination of the sputum and suitable sickrooms for the isolation of the two groups. There has been a tendency of late, even in the most modern sanatoriums, to neglect this precaution. With respect to "closed tuberculosis" and "open tuberculosis," individual isolation may be the rational solution.